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PETROLEUM WEEK

A McGRAW-HILL PUBLICATION

Congress starts study on depletion 15
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- Italy's ENI signs a 70-30 pact;
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Price 50 Cents

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Why This Well Will Be Worth More After Treatment With Acid Petrofrac

This well is one of those that responds better to the acid-oil-emulsion used in Acid Petrofrac® than to any other frac fluid. Many operators find that the resulting high production increases and slow decline rates make for quick payout and good overall profit.

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Services for the oil industry

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DIVISION OF THE DOW CHEMICAL COMPANY

Meet Ethyl's Ed Ellerbe

In the twenty-five years since Ed Ellerbe graduated from Clemson College (with *two* engineering degrees), his experience in the automotive field reads almost like an "ideal" out of a textbook.

Behind Ed's 15 years with Ethyl are seven years as an automotive engineer with a major oil company—working with both gasoline and diesel equipment. Later, he was a partner in an automobile dealership, where he made the service department his special domain. Following that, he was the operator of a truck distributorship. Most of his truck experience was also in the maintenance and parts facilities, Ed says, because sales were handled through dealerships.

At Ethyl, Ed Ellerbe has shown that he can handle people as well as problems. In 1955, he was appointed our Chief Automotive Engineer in the Western Region.

Like his Ethyl counterparts across the country, Ed is a *specialist*, and he keeps up to date through Ethyl's Technical Service group in Detroit, who are in continuous contact with the automotive industry.

Ethyl's Automotive Engineers work regularly with oil companies . . . typifying Ethyl's belief that service is just as important as product.

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1. Using one of Ethyl's portable chassis dynamometers, Ed and Ethyl engineer Marv Russell investigate a detonation problem. This on-the-spot analysis at the plant or fleet maintenance shop often helps solve oil companies' customer difficulties.

2. Planning a technical training program for marketing personnel, Ed goes over Ethyl's Technical Notes with customer executives. Training materials like these, and Ellerbe's experience and know-how, are used to good advantage by oil companies in such programs.

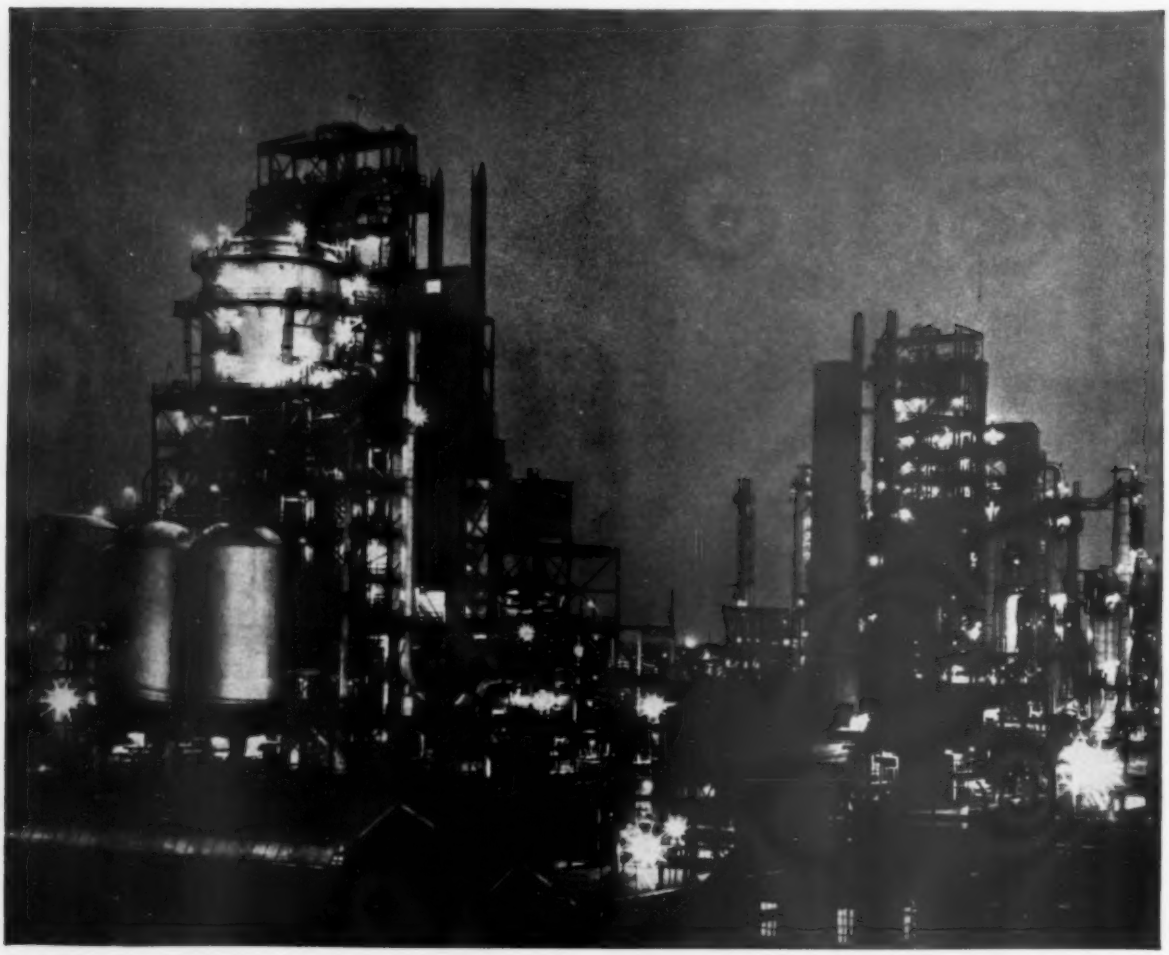
3. Making a presentation at a technical society meeting, Ellerbe brings oil company engineers, fleet owners and shop superintendents up-to-date on new engine developments. His analysis, of course, covers their impact on the petroleum market and fleet operating practices.

4. For a customer looking for a new and different sales presentation, Ellerbe and other Ethyl specialists build a promotion program around Ethyl's multi-cylinder demonstration engine. This versatile engine gives easy-to-understand evidence of the relative effectiveness of fuels.

NEWS ON TEXACO PROGRESS

Two views of progress . . . 57 years apart

YESTERDAY. Texaco's first refinery at Port Arthur came into being in 1902 to turn the black crude oil — newly discovered in quantity — into useful products for mankind. Produced in simple stills, the first products were kerosine, naphtha, asphalt and primitive lubricants.



TODAY. At Port Arthur, and at 11 other major Texaco refineries in the United States, ultra-modern chemical wizardry uses many methods to produce constantly improved gasolines, perfected lubricants, and a myriad of other petroleum products. Because these products are so vastly improved, you can drive a more powerful car — jet planes can fly faster and farther — industry can operate more efficiently. And because it has constantly planned ahead, Texaco's growth has been continuous.

TEXACO

. . . CONSTANT PROGRESS
IN OIL'S FIRST CENTURY

PETROLEUM WEEK

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INSIDE Slant

AN EXCELLLENT IDEA

The oil industry long has needed to acquaint its personnel better with the many facets of the business.

And a one-day public affairs conference has been scheduled on Dec. 8 at Midland to do just that.

It will be under the auspices of the West Texas Oil Information Committee of the Texas Mid-Continent Oil & Gas Assn.

The program will be for oil people to hear expert discussion of the industry's current situation—in society, in politics, and in the economy.

At the same time, they will be informed as to what to do and how to do it in strengthening industry relationships with the general public and with the various levels of government.

Those attending the conference will hear specialists in state finances and taxation, depletion, natural gas, gasoline prices, fuels policy, marketing regulations, press relations, and opinion polls.

That's a broad order for a one-day conference, but it can be done.

And if the technique is successful, it would be worth repeating, not only in Texas, but throughout the nation.

LeRoy Menzing
Editor

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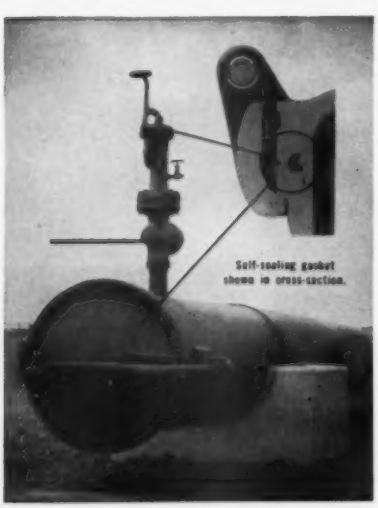

DEPT/Opinions

Views That Make News . . .

"It has come to our attention that some companies supplying Gulf [Oil Corp.] with material, services, or equipment have felt it necessary, in order to obtain or to retain Gulf's business, to make gifts of various sorts or payments of commissions to Gulf's employees or to extend credit or make loans to Gulf employees or to business entities in which such an employee may have an interest. Nothing could be farther from the truth.

"We feel that entertainment of our employees or gifts to them are unnecessary. Moreover, expensive gifts, extravagant trips, and unusual entertainment will not be tolerated."

—W. K. WHITEFORD
President
Gulf Oil Corp.

"Even at this early stage [in the Sahara] when only some 6-billion to 7-billion bbl. [of reserves] have been proved officially, the total exploration expenditure to date, from scratch, only corresponds to 20¢ a bbl.; naturally not yet as low as the Middle East, but within striking distance."

—M. E. HUBBARD
Economic relations
British Petroleum Co.

"The Russians, and not the great international oil companies, now have the power to make or break the oil market. And the Russians are using their power to break it."

—ELIOT JANEWAY
President
Janeway Research Corp.

"Surely the sphere of application of our wide technical knowledge of refining goes well beyond the mere technically and chemically correct operation of the shiny, varicolored masterpieces we now construct. Proper operation of these plants, should, it appears to me, include something more than just jamming every possible barrel of crude through them. Shouldn't it, at least, further include a responsible knowledge and awareness of the markets to be supplied and the economic conditions existing?"

—FRANK M. PORTER
President
American Petroleum Institute

"Ten or twelve years ago, there were 46 U.S. companies and 100 of other nationalities with exploration and/or producing operations in 66 countries. Today there are over 150 U.S. companies and 275 of other nationalities working in 100 countries throughout the world. In addition, there is a growing desire on the part of almost every nation, no matter how small, to have at least one refinery within its borders. Many of these refineries are being planned or are under construction today."

—ZEB MAYHEW
Deputy producing coordinator
Standard Oil Co. (N.J.)

"It behooves all oil men—producers, refiners, transporters, and marketers—to unite and insist on tax equity in financing the [highway] program. Our primary goal must be to see that this year's temporary federal gasoline tax increase is terminated right on schedule at midnight, June 30, 1961."

—ROBERT H. SCHOLL
Vice-president
Esso Standard Oil Co.

"Our industry could easily become the best loved and most highly respected enterprise in the world if every person in it becomes an informed good will ambassador."

—JAMES M. PATTERSON
Director of public relations
American Oil Co.

. . . and Letters

Dear Sir:

Rereading some back issues, we saw your editorial "Government Can't Guarantee Profits" [PW—Aug.7'59p. 56]. In the same or another issue, we noted news of congressional action on a fair trade bill.

We do not recall seeing an editorial attitude expressed by PETROLEUM WEEK on fair trade, either state or national. But if and when this issue faces us more closely, would not consistency require opposition?

The use of what logic we are possessed of convinces us that fair trade in any form or shape is nothing else but a government effort to, as you put it, "guarantee profits," and a most emphatic sort of class legislation.

This is written as no sort of criticism. We highly regard PETROLEUM WEEK in all of its departments.

H. J. MCDONALD
Marimac Oil Co.

PETROLEUM WEEK *will publish each week comments from readers on timely, pertinent subjects. Such expressions are welcome.*

Address all such correspondence to LeRoy Menzing, Editor, PETROLEUM WEEK, *330 W. 42nd St., New York 36, N.Y.*

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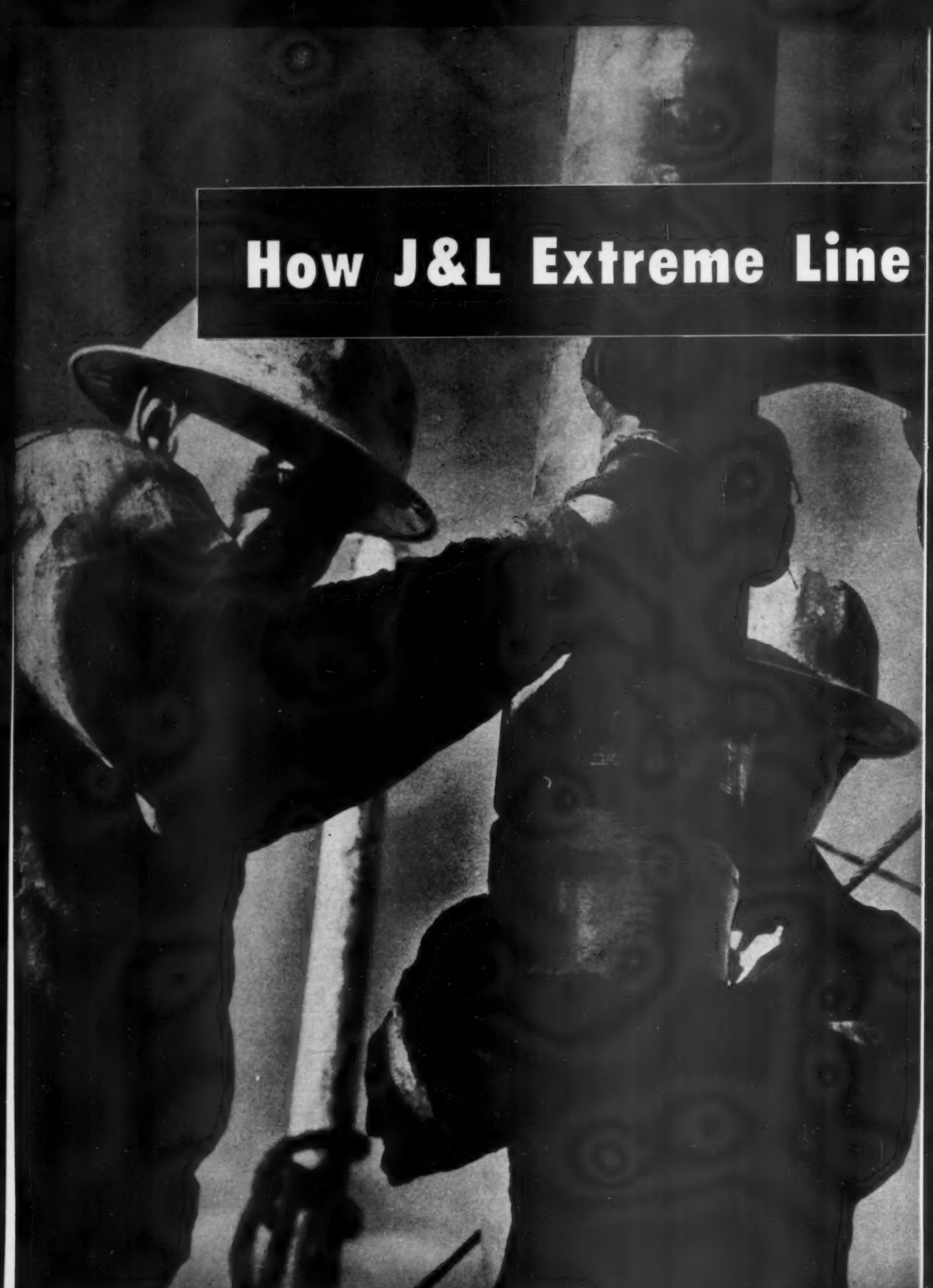
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J&L Extreme Line Casing joints have radial and conical sections, completely independent of the threads, which provide a positive seal unaffected by the most extreme internal or external pressures.

Upset box and pin ends, plus modified Acme-type threads with a steep flank angle, also provide high joint strength for long strings in deep holes.

J&L Extreme Line integral joints are streamlined inside and out. The relatively light external upset decreases the possibility of hanging up—you can safely run this casing through packers under pressure.

You get fast, trouble-free running-in speeds. You stab easily, and you cannot cross-thread. You make up with five to seven turns with the spinning line and less than one turn with the tongs.

You get *everything* in *J&L Extreme Line* made under license from The National Supply Company—high strength in tension, burst and collapse—*and* leak resistance! *This is casing that can be salvaged and rerun repeatedly.*

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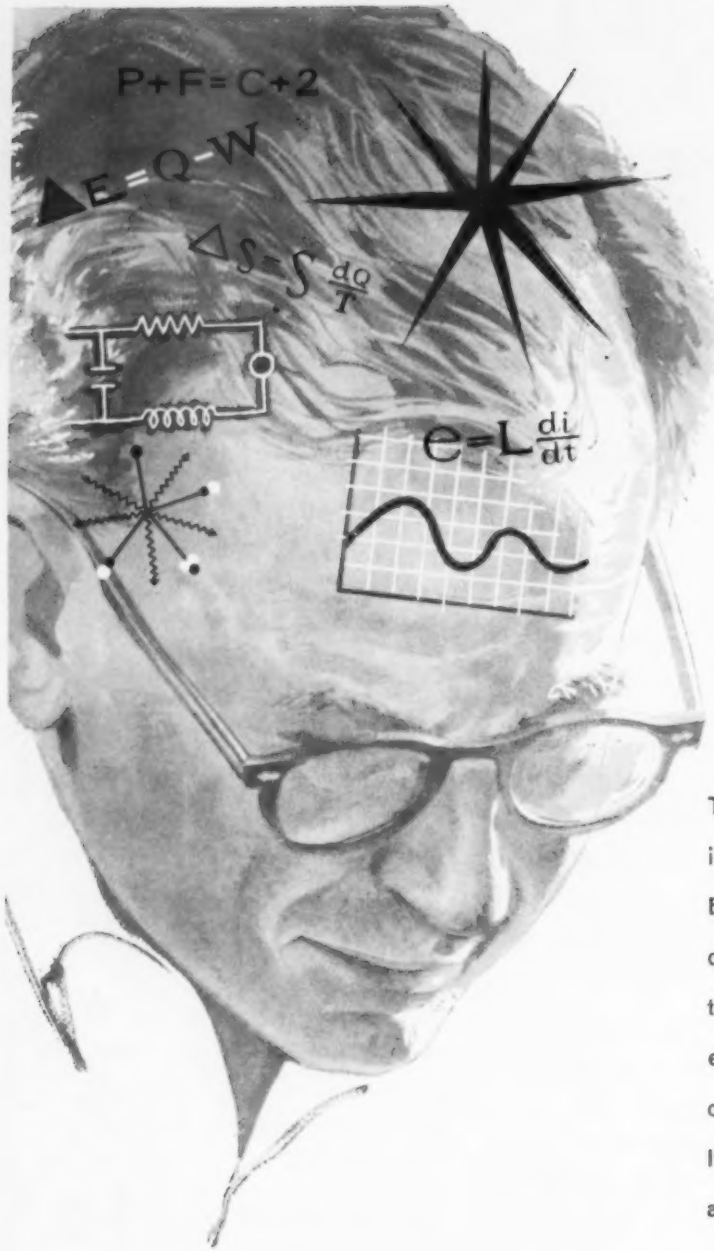

Instruments of the Mind

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60-Second Summary / WHAT'S HAPPENING IN OIL

December 4, 1959

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The oil industry may be able to breathe easier over percentage depletion, at least for the time being. That's the indication from the friendly hearings before the House Ways & Means Committee this week . . . p. 15

•

Jersey Standard expects to complete its consolidation program by **February.** Shareholders paved the way this week by overwhelmingly endorsing the Humble-Jersey merger plan at a special meeting. . . . p. 16

•

Gasoline prices are weakest at the tank wagon level—rather than at the refinery gate. Reductions in several parts of the country have been made by dealers, while refinery quotes remain firm. . . . p. 56

•

Tennessee is coming in for some heavy oil play. It is spilling over from Kentucky's Green County. . . . p. 25

•

Egypt is considering opening land near the Libyan border for oil bids. And Italy's ENI has signed a 70-30 profit-sharing pact with the Libyan government. . . . p. 50

•

The strongest new market for petrochemical adhesives may be in construction. A research institute claims several advantages for adhesives over conventional joining methods. . . . p. 43

•

Offshore operators are watching carefully Army tests of a mobile breakwater. The unit could have many applications for oil—particularly as an aid for drilling in rough water. . . . p. 27

•

A soluble nickel salt additive in lubes cuts engine wear. That's the finding of Sinclair Refining Co., which has just introduced the nickel additive in a multigrade oil. . . . p. 44

•

Waterfloods and gas drives are still showing the best results in secondary recovery operations, though a Gulf Research official admits that several new methods being tested hold promise of greater efficiency. . . . p. 16

•

Cost and safety factors indicate that underground storage of liquid methane is feasible. That's the conclusion of a study by a Texas research committee. . . . p. 46

•

Five large companies now market in 40 states or more, indicative of the trend toward expanding outlets. . . . p. 18

Up to the Minute / SIGNIFICANT LATE NEWS

December 4, 1959

Rotary rig activity in the U.S. and Canada is moving up rapidly, and is nearing the 1959 peak. This week, 2,407 rigs are making hole in the two nations, just 29 short of the year's high point, set in June. The domestic rig count rose for the fourth straight week, edging up to 2,213 on Nov. 30, compared with 2,072 on Nov. 3. In Western Canada, 193 rigs are running this week, up 45 within two weeks.

•

Some Texas, Louisiana, and Canadian crudes continue to be devalued based on refinery realization. This week Tidewater Oil Co. cut its flat price for Conroe oil on the Upper Gulf Coast of Texas by 30¢ a bbl. to $3.23. The company buys and produces 4,700 b/d in the field.

Tidewater trimmed its posting for Louisiana's Venice crude by 7¢ a bbl. to a top of $3.23 for 40-gravity and above. The company, which buys and produces 9,500 b/d, also increased its gravity differential for below-40-gravity oil to 3¢ per degree from 2¢. It said the adjustments were made to bring prices "more nearly in line" with available crudes.

In Saskatchewan, one buyer reduced prices and another increased its postings to end a dual price in the Midale-Weyburn fields. Great Northern Oil Purchasing Co. cut its postings 22¢ a bbl. for 8,000 b/d to 10,000 b/d purchased for refining in St. Paul. Gibson Crude Oil Purchasing Co., which buys between 6,000 b/d and 7,000 b/d for Canadian Oil Companies' Sarnia refinery, increased its postings by 13½¢ a bbl. in those fields. The sour crudes, which have been considered "distress" oils because of relatively poor yields, are now uniformly posted at $1.72½ for Weyburn medium, $1.75 for Midale A, $1.72 for Midale B, and $1.67 for Midale Elswock.

•

Price discrimination charges were filed this week against four major oil companies by the Petroleum Dealers Assn. of Phoenix, Ariz. The complaint to the Federal Trade Commission named Shell Oil Co., Richfield Oil Corp. (L.A.), General Petroleum Corp., and Texaco Inc. It alleged that the companies engaged in price discriminations against their own retailers.

•

Mandatory controls on imports are boosting the Military Petroleum Supply Agency's costs. So say MPSA officials, who indicated that their figures will be used in any government review of the imports program to determine its effect on oil prices. The agency, in a classified document to the Interior Dept., compared costs of buying petroleum products before and after import controls went into effect.

•

Distillate prices on the East Coast went up this week, for the first time in the current heating season. Esso Standard started it, and within 24 hours, Mobil, Gulf, and Atlantic got on the bandwagon. The increase amounted to 0.3¢ to 0.5¢ in the East and on the Gulf Coast. The hikes are expected to be reflected back in a firmer market in the Gulf area.

another first from Western research

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VELOCITY perforating is not subject to the burden of royalty payments — is Western's newest step in wire line economy for the oil operator.

Revolutionary VELOCITY perforating—

- Provides effective perforating of casing, cement and formation
- Does not plug or obstruct perforations and excavations into the formation
- Saves you up to 30% in perforating costs

The new VELOCITY principle is now available in the SCORPION charge with both four- and five-inch steel-cased guns, conventional or selective fire.

Get complete information on how VELOCITY perforating can save you up to 30%, made possible by Western engineering for effectiveness and economy. Full details are available from all Western service points throughout the Southwest. Contact your nearest Western engineer.

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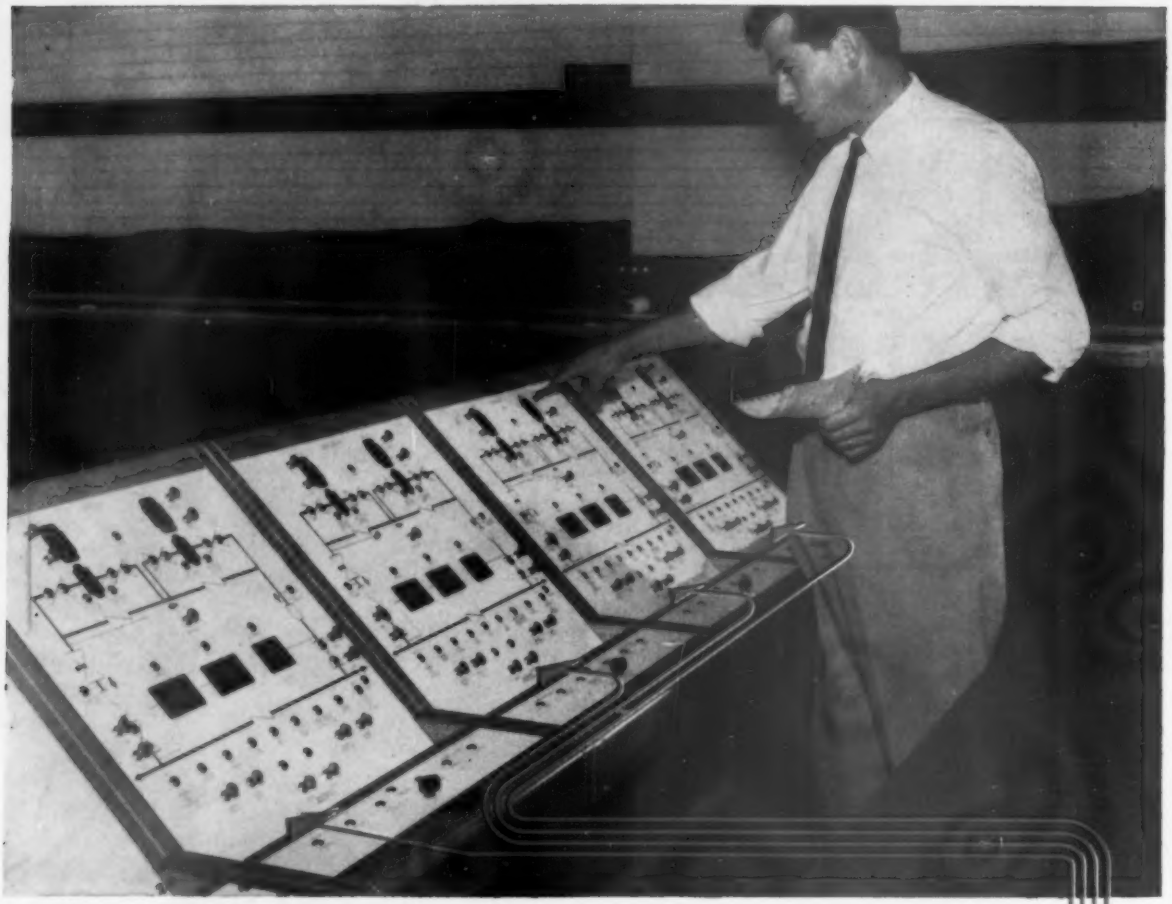
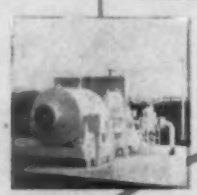
Union Centralized Transport Control pays



LOS ANGELES CONTROLLING OFFICE—The heart of the whole operation is in Los Angeles where one man at the control console can supervise the operation of four unattended pump stations 643 to 804 miles away. The operator has complete information before him showing conditions all along the line.

PHOENIX
Output Terminal

TUCSON
Output Terminal



APACHE
Unattended Booster Pump Station

REMOTE CONTROL—Either pumping unit at any one of the four booster stations can be started or stopped from Los Angeles. The sequence in opening and closing valves and starting and stopping pumps is all handled automatically and correctly by the control system.

off for Southern Pacific Pipe Lines

Push a button in Los Angeles

and four pump stations throb into action out on the desert over 600 miles away

Union Switch & Signal equipment controls operating sequence and telemeters operation of 33,000 bbl/day products line

FLEXIBILITY and fail-safe operation are the keynotes of the new pipeline system operated by Southern Pacific Pipe Lines, Inc. The line is used to transport refined products such as gasoline, jet fuel, diesel oil, etc., from El Paso, Texas, to Tucson and Phoenix, Arizona. All Centralized Transport Control equipment for four unattended booster stations was supplied by Union Switch & Signal.

REMOTE or LOCAL: All four booster stations are normally controlled from Los Angeles. Any station can be controlled locally, when desired. In any case, continuous pressure and suction readings are displayed on the console at Los Angeles and automatically recorded every fifteen minutes by an automatic typewriter. Any malfunction, at any point in the system, is indicated on the console. The equipment affected is shut down automatically and cannot be started again until the trouble has been cleared.

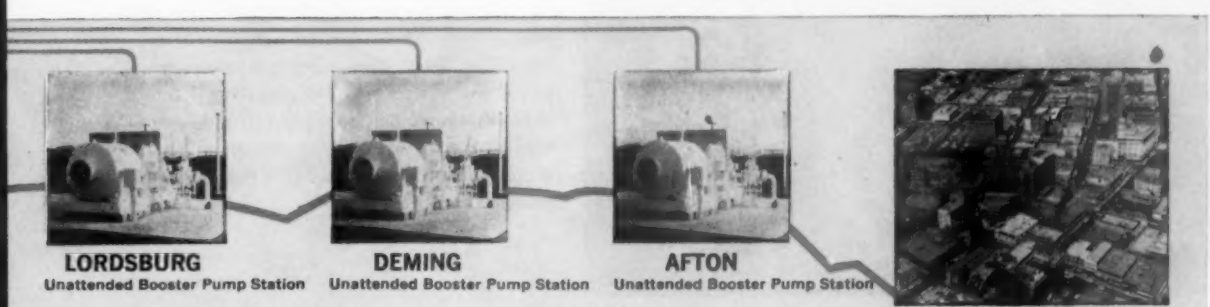
COMMUNICATION: Four telegraphic-type communications lines, owned by Southern Pacific, are used to transmit control codes to the stations and telemetered information back to Los Angeles. Each line serves one station. An additional commercial communications line serves as a stand-by for all four stations. Signals are coded to prevent noise or interference from causing faulty operation or indication.

MAXIMUM EFFICIENCY: The Centralized Control system, designed and installed by Union Switch & Signal Division of Westinghouse Air Brake Company, cuts down the chance for expensive error. It keeps the Southern Pacific Scheduling Department in Los Angeles informed, at all times, of exactly what is happening in the field. It speeds operation, adds security and reliability.

Union Switch & Signal has designed many successful custom systems for pipeline companies. And now out of that experience, it has developed standardized central control systems that cut costs, add flexibility, and save space, as well as making pipeline control extremely reliable.

"Pioneers in Push-Button Science"

UNION SWITCH & SIGNAL
DIVISION OF WESTINGHOUSE AIR BRAKE COMPANY
PITTSBURGH 18, PENNSYLVANIA



LORDSBURG
Unattended Booster Pump Station

DEMING
Unattended Booster Pump Station

AFTON
Unattended Booster Pump Station

EL PASO
Input Terminal

LOCAL CONTROL—Operation also can be controlled automatically at the pump station. Or the station can be run manually. The choice is up to the local station. But Los Angeles always knows which mode of control is being used and always receives a continuous flow of system information.

THE FUTURE—Southern Pacific Pipe Lines, Inc. can already see opportunity to make this system more automatic and more efficient. They plan, in time, to be able to let stations adjust automatically to proper unit operation when an upstream or downstream station goes off the line.

MR. P. C. SPENCER

Chairman of the Board
Sinclair Oil Corporation

"A vital part of the oil industry . . ."

"The success of any company, large or small, is governed by its people. Our industry, above all, relies on their inquisitiveness, their ideas, their dedication.

"And this industry has offered the opportunity to exploit the ideas from which come new products and goods that enrich our lives.

"From this 'freedom to develop' atmosphere have come literally thousands of oil end-products ranging from tooth brushes and fine fabrics to tires for your car. But this is only a part of the story. We dare not overlook, nor fail to credit, the thousands of people and the many companies whose engineering and research talents have played a major part in this developmental success—those who operate behind-the-scene, so to speak—those who furnish the equipment and services to drill and produce the oil and gas.

"I speak of the Manufacturing, Service, and Supply companies. A vital part of the oil industry, they provide equipment, processes, research and engineering skills that have helped make our industry what it is today . . . a free enterprise working for a better way of living for people the world over."

P.E.S.A.*

* PETROLEUM EQUIPMENT SUPPLIERS ASSOCIATION

PROUD TO BE PART OF A PIONEERING INDUSTRY

PETROLEUM EQUIPMENT SUPPLIERS ASSOCIATION

Depletion Has 'Friendly' Hearing

Even opponent members of a Congressional panel say that no immediate change should be made in percentage depletion without a detailed study of all the facts.

The House Ways & Means Committee this week failed to indicate any change in its thinking on oil and gas depletion, although the tax provision received rough handling from some members of an expert witness panel.

The committee heard a depletion debate from a ten-member panel composed of two oil company executives, three spokesmen for metal and coal industries, and five college professors.

The hearings were part of a general inquiry being pushed by Chairman Wilbur Mills (D., Ark.) to determine whether the tax base should be broadened.

The congressional Democratic majority hopes that the committee can find increased tax revenues by taxing income now exempt, and thus, perhaps, be able to reduce personal and corporate income tax rates.

Richard J. Gonzalez, of Humble Oil & Refining Co., and Scott C. Lambert, of Standard Oil Co. of California, led the defense of oil and gas depletion, arguing that three decades under the present provision have proved its worth.

Both Gonzalez, a Humble director, and Lambert, general tax counsel of his company, said the high element of risk in oil production can't be measured by cost accounting. Any reduction in the present 27.5% depletion rate would cause the nation severe economic harm, they contended, and would reduce, rather than increase, over-all federal revenues.

The educators on the panel were largely critical of depletion, but opposed any immediate sharp cut and were inclined to favor further study of the issue.

Sentiment on depletion from the college professors ranged from outright opposition by Horace M. Gray, of the University of Illinois, to qualified approval by the University of Wisconsin's Peter Steiner. Charles O. Galvin, law professor at Southern Methodist University, drew support for his request for "careful analysis of raw statistical and economic data," rather than action on present theories.

Joseph Sneed, Cornell University law professor, said he has not been convinced that depletion is necessary, but warned critics that they must present more factual evidence than "finger-pointing at some wealthy tycoon." Sneed agreed with Rep. Hale Boggs (D., La.) that any immediate withdrawal or major reduction of depletion would carry with it the risk of sharp strain on the economy. Boggs said Louisiana's economy would all but collapse in such event.

Questions from committee members indicated that the House group will be reluctant to press for any change in depletion.

Traditionally, committee membership has been inclined to support both the depletion principle and the present rate.

Chairman Mills' own position on depletion is something of an enigma.

Mills is generally classed as a member of the moderate, middle-of-the-road school of Democrats. His views on most matters are close to those of House Speaker Sam Rayburn (D., Tex.), whom he may some day succeed. But Rayburn says frankly that depletion is necessary and that he is not inclined to change the present level or the method of administering the provisions.

Mills, however, does not fall in the "friend-or-foe" pattern of depletion sentiment in Congress. Most oil men have considered him "friendly," but many were surprised at what they considered a belligerent tone used by Mills in a recent article on taxes.

Those close to Mills say he has no fixed views on depletion, that his mind is open. The chairman is said to assume that the provision is justified, but wanting proof that it is so. But Mills also thinks some aspects of depletion might be changed. He does not identify the aspects.

Any tax changes won't necessarily be sought in 1960. In fact, most committee members say they will be surprised if an effort is made to push through a tax revision bill next year. The current hearings will be continued in the next session, and may extend into the summer.

Although 1961 appears to be the most likely year for a tax bill, there remains, however, the political appeal of such legislation in a presidential election year.

Committee members have a large amount of depletion testimony to digest before making up their minds. Besides this week's public hearing, the committee also has a lengthy compendium of papers submitted in advance by the depletion panelists.

On the prodepletion side, Gonzalez of Humble cited, among other factors, the high level of taxation already being applied to oil and gas.

"If percentage depletion provides any measure of preferential treatment, such advantage is more than offset by the burden of other taxes," Gonzalez said. He listed Texas and Louisiana severance and property taxes amounting to about 23¢ per bbl. of production; and excise taxes imposed on gasoline "at a much higher rate than on other essential products and even than on many luxury items."

In 1958, Gonzalez told the committee, "excise taxes alone amounted to about $1.44 per bbl. of domestic consumption of petroleum products."

Opponents of depletion assert that the depletion provision fosters government intervention in the oil industry.

Illinois' Gray urged that depletion stimulates excessive and unnecessary investment in the areas affected, thus "producing excess capacity and wasting scarce capital." To cope with this excess capacity and the subsequent economic instability, Gray said, "the government intervenes with price-fixing, restrictionistic, and stock-piling schemes . . ."

After listing seven "adverse economic consequences," Gray summarized:

"The depletion allowance is fraught with so much evil and is so devoid of merit that it should be discontinued forthwith as an instrument of public policy."

Spokesmen for the iron ore, non-

ferrous metal, and coal industries also defended depletion before the committee.

Herbert C. Jackson, a partner in Pickands Mather & Co., iron ore firm in Cleveland, noted that today's dollars returned to mineral producers through depletion have 50% less buying power than in 1932, but will buy only one-eighth the labor. When reinvested, he said, the dollars can create only a fraction of the 1932 production capacity.

Speaking for the nonferrous metal mining industry, L. J. Randall, president of Hecla Mining Co., Wallace, Idaho, said that if Congress in 1932 saw fit to provide depletion for metal mines, "then certainly Congress can hardly conclude that today's deduction is unreasonable . . . ."

Rolla D. Campbell, general counsel of Island Creek Coal Co., Huntington, W.Va., told the committee it could cut present tax rates, announce a program of further reductions, and "so stimulate business that tax revenue will not decline but will actually increase."

Campbell asked for adjustments in the depletion provision to allow 15% of gross income for coal, instead of the present 10% level.

Older Recovery Methods Are Still Best

Conventional waterflood and gas drive are still superior in field use to the various recovery techniques being developed through continued research, according to R. A. Morse, of Gulf Research & Development Co.

Morse noted, however, that many of the newer processes—such as miscible-phase displacement and in-situ combustion—do have the potential of higher recovery than is now possible with conventional methods.

During the next few years, he added, the field test work already under way or being planned should "adequately define" where these new processes can be applied profitably.

Morse reviewed current trends in oil recovery in a report to the annual meeting of the Interstate Oil Compact Commission, in Philadelphia this week. The meeting marked the 25th anniversary of the conservation group.

Most of the new recovery processes are aimed at reducing, or eliminating, the interfacial forces between the oil and the flooding medium, Morse said.

"If the interface [physical boundary] between driving and driven fluids can be completely eliminated," he added, "we know from laboratory experience that no residual oil remains trapped as in waterflooding, nor is there gross bypassing as in gas drive.

"Rather, there is a zone of mixing between displaced and displacing fluids, with the displaced fluid being replaced completely as the flood progresses.

"The ideal recovery process then, it would seem, must strive toward elimination of any interface between the oil to be displaced and the ultimate displacing fluid."

Morse said that most of the new processes have worked in this direction, "whether inventors have been aware of this common objective or not."

Perhaps the newest secondary recovery process being tested is reverse combustion. This method is designed for oil recovery from tar sands, Morse said.

In this process, air is injected into the reservoir through an air-injection well and ignition is started at the producing wells. Continuous air injection results in the combustion zone moving toward the injection well, opposite to the direction of injected air movement, Morse said.

The temperatures in the reaction zone are lower than those obtained in forward combustion, ranging from about 500F to 800F, compared with about 1000F for forward combustion.

All of the fluids are produced in vapor form, resulting in the possibility of very high production rates where the in-place permeability is sufficient for large air-injection rates, Morse continued.

The reverse-combustion process also upgrades the crude, he said. Where the original tar is of 5-gravity to 10-gravity, and exists as a semisolid at reservoir conditions, oil can be produced at 20-gravity to 25-gravity.

"Unless the initial tests yield oil or good quality at a price very competitive with conventional crude production," he said, "it is doubtful that this process will be as actively pursued as the methods applicable to normal crude reservoirs."

Jersey-Humble Merger Approved

Shareholders of Standard Oil Co. (N.J.) overwhelmingly endorsed a management plan to merge Humble Oil & Refining Co. into Jersey and to consolidate most of their domestic operations.

The vote came in routine fashion at a special meeting in New York. With more than 600 shareholders present, the outcome was: 183,738,091 for, and 504,278 against.

The endorsement came less than a week after Humble shareholders approved the merger in Houston with a vote of 99.48% in favor of it.

February is the target date for completion of the unification.

Officers expect that, by then, Esso Standard, Carter Oil, Oklahoma Oil, and Pate Oil will be absorbed as divisions of the newly created Humble Oil & Refining Co. (Del.).

A single nationwide brand for the merged companies, still to be chosen, will be used in parallel with existing separate brand names of Jersey's U.S. affiliates.

One stockholder suggested at this week's meeting that the company sponsor a contest among its shareholders to select a new brand name.

M. J. Rathbone, president of Jersey Standard, said several groups are working on a name. Once it is selected, the new name will be used with brands of the various divisions to capitalize on the competitive impact already built up by these companies.

He also confirmed anew that it is the new Humble company's intention ultimately to operate in every one of the 50 states.

Stockholders were told that the Jersey company's financial picture is sound, and that profits in 1959 will be "well above" last year's.

Rathbone said that, despite current price weaknesses, Jersey's profits for the first 10 months are 17.6% over the same period of 1958. But he conceded that it is doubtful that 1959 earnings will top those of peak year 1957.

Later in the week, O. V. Tracy was elected president of Esso Standard.

Tracy, a vice-president since 1956, succeeds William Naden, who previously was named executive vice-president of the new Humble company. Robert H. Scholl, also a vice-president, was elected executive vice-president, succeeding E. Duer Reeves.

Upsurge Helps Western Canada's Oil

A fourth-quarter upsurge, now well under way, is helping Western Canada's oil industry to recover some of the ground it lost in 1958 and early 1959.

Companies have been stepping up their fall and winter activities. And important gains are expected to be reflected in the year-end statistics, as a direct result.

Forecasts indicate that some production records will be set.

Crude output is expected to average 506,000 b/d for the four western provinces—Manitoba, Saskatchewan, Alberta, and British Columbia.

This is 10,000 b/d higher than the previous peak, set in 1957, and a healthy 55,000 b/d more than last year.

Natural gas production also will be substantially ahead of 1958, on the basis of trends through the first nine months of this year.

Companies expect to deliver 500-billion cu. ft. by Dec. 31. This will be 20% greater than in 1958, and more than double the previous high, set in 1956.

Well completions are up 6% already, and drilling activity, which has been moving ahead steadily all year, is up sharply in the fourth quarter.

Accompanying the higher rate of completions has been a shift to shallower wells. The average depth so far this year has been 5,013 ft., compared with 5,230 ft. last year.

Rig activity is on the high side, continuing the fast pace set in the third quarter. There are 187 rigs in operation now, compared with 160 rigs last year.

Another indication of the increased activity is the fact that there was little change in rig activity from week to week last year, while throughout October and early November of this year there has been a fairly steady increase.

There's been an increase in wildcatting, too. Of the 1,924 completions registered up to Oct. 1, for example, 685 were wildcats, compared with 599 for the same period of last year.

The success ratio has been better also, 36.5% this year, compared with 30.9% for the first nine months of 1958.

But there's one note of gloom: Revenues are not expected to keep pace with the peak performances in other basic categories.

This is due mostly to the 1959 price cuts.

Gross production revenue from crude, natural gas, and byproducts is expected to hit around $465-million for the year.

This exceeds the 1958 revenue of $425-million by an encouraging margin, but it's still below the 1957 record of $470-million.

The setback on the revenue side is the result of what the Borden Commission termed "a distinct break in the historic relationship between the price of Canadian and Illinois crude."

The expected average price of $2.28 a bbl. this year is 13¢ below 1958, and represents a loss of $24-million to the Western Canada industry.

The previous low was $2.33 per bbl. in 1952; the high was $3.10 in 1948.

The cuts last March marked a historic change in the pricing pattern of Canadian oil.

For the first time, the Canadian wellhead price became tied to the world crude price rather than to that of the U.S. Illinois Basin, which had been the basis since 1948.

Refinery Growth Halts Abruptly

(crude charging capacity in bbl. daily)

	September 1958	September 1959	September 1960 (estimated)	+or- '60 over '59
East Coast (Dist. 1)	1,534,050	1,590,600	1,590,100	-500
Midwest (Dist. 2)	2,745,200	2,772,250	2,812,650	+40,400
(Ind.-Ill.-Ky. Portion)	1,707,700	1,716,650	1,747,650	+31,000
Southwest (Dist. 3)	3,509,050	3,499,000	3,526,600	+27,600
(Gulf Coast Portion)	2,981,800	2,946,300	2,967,800	+21,500
Rocky Mt. (Dist. 4)	333,650	333,100	340,600	+7,500
West Coast (Dist. 5)	1,471,650	1,525,200	1,512,200	-13,000
Total U.S.	9,593,600	9,720,150	9,782,150	+62,000

Growth plans for U.S. refineries, for the first time in a decade or more, are so nebulous for 1960 that even the term insignificant seems like a heady description.

This is obvious in the latest survey by the American Petroleum Institute, which shows that the expansion of crude-charging capacity in the U.S. has come to a near-halt, for the time-being at least.

API's annual study estimates that operable refining capacity as of next Sept. 30 will be 9,782,150 b/d, which is a gain of only 62,000 b/d in 12 months.

This is a far cry from the seven-league strides that have marked the expansion rate in recent years. Since 1950, annual additions have ranged from 211,760 b/d in 1955 to as high as 526,000 b/d in 1958.

The API forecast includes 522,850 b/d of capacity which, while operable, is in the high-cost, marginal group, and is currently shut down.

Of the 62,000 b/d to be added in the 12 months ending next Sept. 30, only 20,500 b/d are planned for the first nine months of the new year.

The other 41,500 b/d are scheduled to be added before Dec. 31, 1959. This gives a total addition of only 78,550 b/d for all of 1959—50,000 b/d below API's conservative estimate of last fall, because of refiners' subsequent curtailments of 1959 expansion plans.

The 20,500 b/d to be added next year will be completed by Mar. 31, the API forecast indicates, which means that capacity will remain stable from then through Sept. 30.

Two areas—Illinois-Indiana-Kentucky, and the Gulf Coast—account for most of the expected 62,000 b/d increase.

The revamping program being carried out by Standard Oil Co. (Ind.) is believed to reflect most of the 31,000 b/d additions in the Midwest. The company refuses to comment, but no other appreciable building programs or changeovers are in the works in that area.

The Louisiana Gulf accounts for 10,000 b/d of the 15,000 b/d increase predicted for the Gulf Coast area generally.

Where the Top 25 Oil Companies

The competitive push for outlets in the U.S. is spurring more companies into new areas: Five of the 25 largest U.S. companies now market in 40 states or more (red areas on maps).

And another four market in 30 states or more.

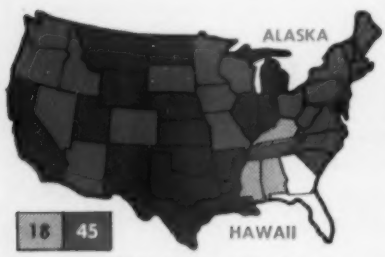
The remaining companies' marketing territories range from a 26-state area to a five-state area.

Standard Oil Co. (N.J.) and its affiliates have pushed their total number of marketing states to 37 in recent years. The growth resulted from Humble Oil & Refining Co.'s move into Arizona and New Mexico and Carter Oil Co.'s entry into Washington and Oregon, plus the acquisition of Pate Oil Co., Oklahoma Oil Co., and Gasteria, Inc., in the Midwest, by Jersey Standard itself.

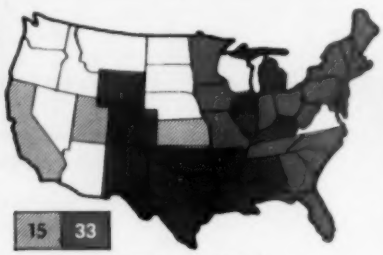
Texaco Inc. is rapidly pushing its plans to enter Hawaii to regain its title as the only U.S. company marketing in every state.

The company also plunged into the fuel oil market at the consumer level this year with the purchase of Paragon Oil Co., which was one of the biggest independent jobbers on the East Coast.

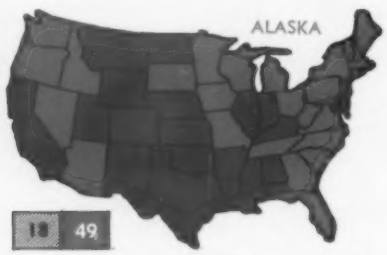
The move followed the trend of oil companies to acquire independent



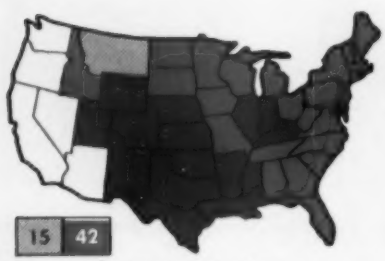
SOCONY MOBIL OIL CO.



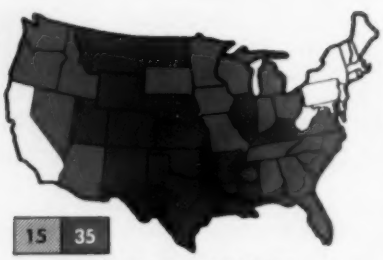
GULF OIL CORP.



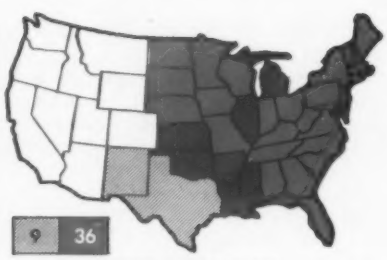
TEXACO INC.



SINCLAIR OIL CORP.

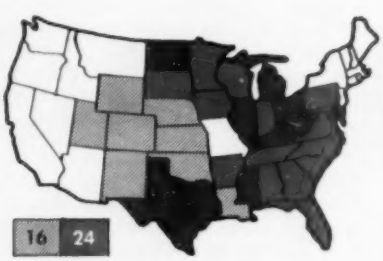


PHILLIPS PETROLEUM CO.

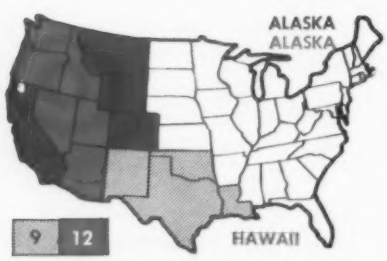


CITIES SERVICE CO.

ATLANTIC REFINING CO.

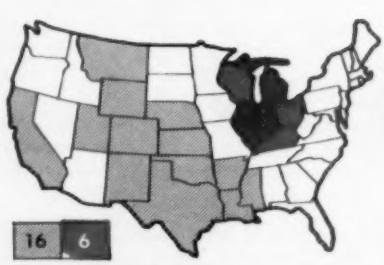


PURE OIL CO.



UNION OIL CO. OF CALIFORNIA

ASHLAND OIL & REFINING CO.



OHIO OIL CO.

RICHFIELD OIL CORP. (L.A.)

Produce and Market in the U.S.

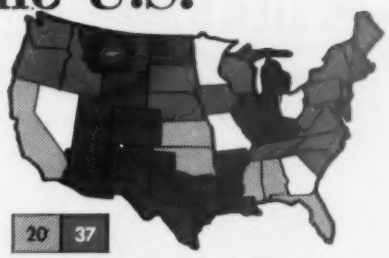
outlets through purchase and merger to strengthen their positions or to move into new areas.

Ohio Oil Co. is another example of the push for new markets. Once limited to Ohio alone, the company now markets in six states.

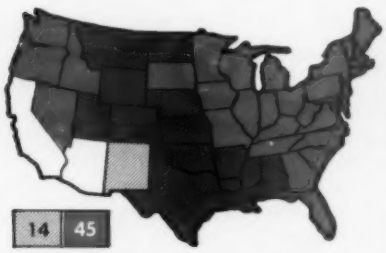
The only company among the 25 largest in terms of gross income that does not market is Amerada Petroleum Corp.

While production has been extended to new states in recent years, oil companies have not pushed this expansion as extensively as marketing.

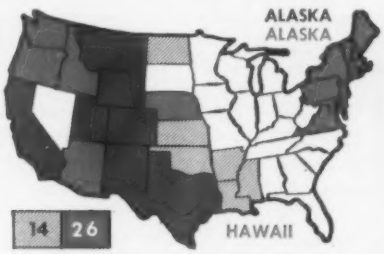
Oil now is produced in 31 states (gray areas on maps). No one company has production in all. Jersey Standard comes the closest with production in 20 states. The only one that has no production is Standard Oil Co. (Ky.).



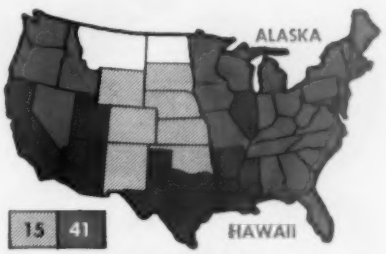
STANDARD OIL CO. (N.J.)



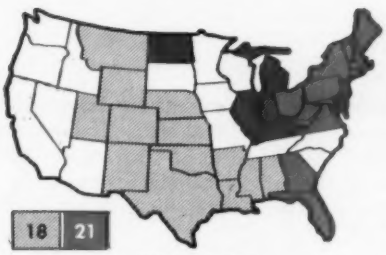
STANDARD OIL CO. (IND.)



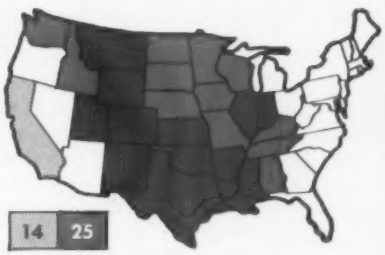
STANDARD OIL CO. OF CALIFORNIA



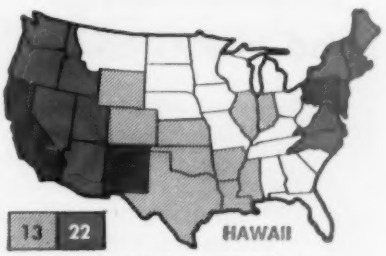
SHELL OIL CO.



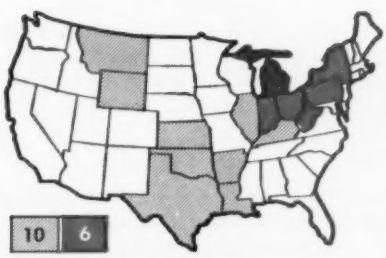
SUN OIL CO.



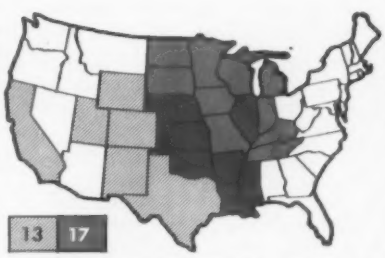
CONTINENTAL OIL CO.



TIDEWATER OIL CO.

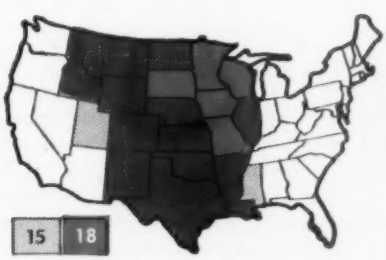


STANDARD OIL CO. (OHIO)

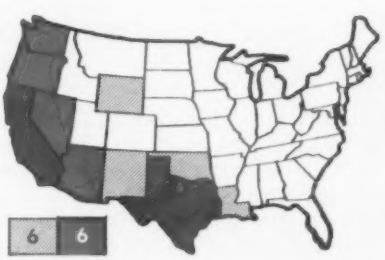


SUNRAY MID-CONTINENT OIL CO.

STANDARD OIL CO. (KY.)



SKELLY OIL CO.



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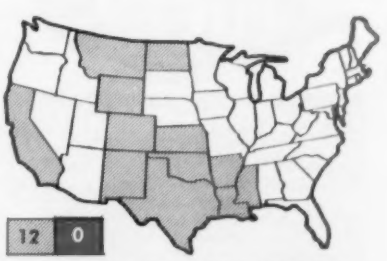

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What's New / IN THE INDUSTRY

Mandatory controls have slashed unfinished oil imports into Districts I-IV by 80% in the first seven full months of operation. In the seven months immediately preceding controls—September, 1958, through March, 1959—imports averaged 165,059 b/d, excluding those into Puerto Rico. From April through October of this year, the imports dropped to 33,385 b/d. Government oil specialists feel this proves that mandatory controls on unfinished oils plugged a big loophole.

In contrast to the East Coast, the controls have brought little change in the West Coast. Unfinished oil imports averaged 11,620 b/d into District V in the seven months before controls, and 11,285 b/d in the seven months after.

•

The Office of Naval Petroleum Reserve would like to sell its share of Elk Hills crude—but would be willing to exchange it. The 12,500 b/d of production from the California reserve will be available about May 1 when an exchange agreement with Standard Oil Co. of California ends.

Capt. A. S. Miller, NPR director, says his office would prefer to sell the crude, but that exchanges will be considered because of the "depressed crude market on the West Coast." In exchange, the Navy prefers JP-5 or Navy Special, in that order. It will weigh offers of JP-4, marine diesel, and Grade 115/145 avgas. A five-year contract, terminable by either party on six month's notice, is proposed, Miller said.

•

Oklahoma's allowable for December and January was left unchanged. The Corporation Commission, however, estimates that actual production will be 545,000 b/d—or more than 5,000 b/d higher than November. This will be due to new wells, and to producers cleaning up the underproduction of past months. Purchasers nominated 523,180 b/d, up 1,800 b/d from November nominations.

•

The North Carolina Oil Jobbers Assn. last week called for a study of all facets of petroleum marketing. The move came after attempts to maintain fair trading of gasoline in the state failed—and all majors in the state abandoned fair trade (page 60). Directors of the association resolved that the study should be made to determine ways and means to eliminate the ruinous practices that have created chaos in gasoline marketing.

•

The Idaho legislature will probably be asked to put gasoline suppliers under regulation of the Public Utilities Commission. The state attorney general, Frank L. Benson, who has been conducting an investigation of gasoline prices in southern Idaho during the past few months, says he may make the motion at the legislature's next session. Benson says the investigation showed that motorists were paying "too much" for gasoline. The pricing probe, he adds, may be extended into northern Idaho.

•

Dresser Industries will build a "Service Center" in the Midland-Odessa area. It will include an office building to provide quarters for the various subsidiaries, a warehouse, and other storage accommodations and servicing facilities. John B. O'Connor, president, says the installation will coordinate the personnel of all Dresser units in the Permian Basin. No detailed plans have been prepared, but a survey will be taken to determine the most advantageous site.

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Looking Ahead in Washington

McGraw-Hill
Washington
Bureau
December 4, 1959

The Federal Power Commission is sticking to its policy of discouraging boiler fuel use of natural gas. The latest insight into FPC thinking came in a case involving El Paso Natural Gas Co., which wants to spend $24-million to expand its system for sales to the southern California market. El Paso had earmarked the gas—100-million cf/d—for sale to Southern California Edison Co., which would use the supply to fire boilers. (Two Southern California distributors would have taken the 100-million cf/d from El Paso at the state line and made delivery to the utility company.) But FPC turned thumbs down on the sale to Southern California Edison. The commission certified the expansion project only if El Paso sells to the distributors—not to the electric company.

FPC's position in the El Paso case, however, may not get a court test as did a previous "end use" ruling. El Paso President Paul Kayser says he has no objection to the alternative sale to the two distributors. FPC, of course, cannot control end-use of gas in intrastate sales. So the El Paso gas still can go indirectly to the utility company's boilers if the state regulatory body approves.

But the new case shows that FPC's judgment has not changed because of one adverse court ruling. In the recent Transcontinental-Consolidated Edison Case, FPC refused to certify an arrangement for Transcontinental to transport to New York gas purchased in Texas by Con Ed. An appeals court said FPC overstepped its bounds in trying to control boiler-fuel use of the gas (PW—Nov.13'59,p22). The case is on its way to the U.S. Supreme Court. Now FPC, in the El Paso case, shows it is still sticking to its guns. The El Paso and Transcontinental cases are dissimilar in many respects, but alike in the principle of boiler-fuel use.

•

Coal spokesmen are losing no time in striking at planned increases in residual fuel oil imports. Protests from the coal industry are coming close on the heels of Interior Secretary Fred Seaton's disclosure that the residual import level will be increased by Jan. 1. Sen. Robert C. Byrd (D., W. Va.) wrote Seaton that the boost would be "unwise, unnecessary, and unwarranted." Byrd said Seaton should reduce—not increase—the import level.

•

The government is moving to inject new life into the Foreign Petroleum Supply Committee. FPSC has ready a standby plan for quick action in any future petroleum supply stoppage—such as the 1956 Suez crises. But beyond this plan, the committee of oil company representatives has been relatively inactive in recent years. Now an arrangement has been worked out for the committee to assist Defense Dept. planning. A "Readiness subcommittee" will be formed to work mainly on Pentagon assignments, under the direction of the Interior Dept. The over-all committee also will be enlarged. Invitations to join will be issued to several companies that started foreign operations only recently. Under the new arrangement, committee members will be able to supply the military with up-to-date industry information. But the committee won't be allowed to look at individual-company data, under antitrust requirements of the Justice Dept. even though the attorney general sees no "adverse effects" of the operation on the committee.

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Kentucky Play Spills Into Tennessee

The oil play ignited by Kentucky's Green County has spilled southward into Tennessee, where the heaviest oil play in that state's history is now under way.

Most of the activity in Tennessee is concentrated in an area involving eleven counties, seven of which are just below the Kentucky border (map). These counties are Pickett, Scott, Clay, Fentress, Overton, Putnam, Morgan, Davidson, Dickson, Bedford, and Coffee. Much of the activity began only in the past few months.

H. C. Milhous, Tennessee petroleum geologist, reports 25 rigs active in the state. Pickett County, where eight tests are being drilled, is the focal point.

Most of the drilling is with truck-mounted or water-well rigs, but at least one rotary is operating, in Clay County.

One operator estimates that $1-million worth of equipment has been moved into the middle-Tennessee area, much of it within the past six months.

In comparison with the current activity, only 25 tests were drilled in all of 1958. Of these, one well produced a small amount of oil and two produced noncommercial amounts of gas. Total footage in this shallow-hole country was only 20,245 ft. last year.

Results of Tennessee drilling have been disappointing so far. But the hunt goes on.

More than 1-million acres have been leased in the upper mid-Tennessee area in the past eight months or so. Several majors (including Gulf Oil Corp. and Carter Oil Co.) have moved into the area and acquired large blocks (PW—Jun.26'59,p32).

Further stimulation to drilling is coming from H. L. Hunt Oil Co., which is reported offering $1.50 per ft. dry-hole money for drilling adjacent to the company's large lease blocks.

"Up to now," say Milhous, "it's been one dry hole after another, with some encouraging shows. But none of us can believe that oil production possibly can stop at the Kentucky state line.

"With all this activity, we're bound to get some oil."

W. D. Hardeman, chief state geologist in Tennessee, said recently, "The extremely successful production from shallow wells in Green County, 50 mi. north of our state line, has opened the eyes of the wildcatters and even of some of the majors.

"They are finding that enough of these shallow wells from 500 ft. to 700 ft. deep can load a pipeline to capacity. At the same time, Green County drillers are finding that wells once abandoned when they produced salt water often can be pumped until they produce oil."

H. C. Mills, another state geologist, says many operators have come into Tennessee from Kentucky "because lease prices in Green County jumped to as high as $1,000 an acre."

He notes that production in the Green County area has proved profitable at only 1 bbl. a day of production for each 100 ft. of depth.

"This means 5 b/d of oil from a 500-ft. well will more than pay expenses," Mills says.

One test started only a few weeks ago is slated to go "all the way to 3,500 ft.," making it the deepest yet projected in the area.

This test, 3 mi. south of Byrdstown, Pickett County, is being drilled by David W. Bywater, of Dallas.

The great majority of holes drilled, however, are aimed at hitting production in the shallow Trenton and lower Stone's River formations, in the Chattanooga shale. Operators generally expect to go no deeper than 850 ft. in their efforts to tap extensions of scattered southern Kentucky oil pools. Several tests, however, are projected to around 2,000 ft.

Tennessee operators haven't run into the water problem that has been met in the Green County area.

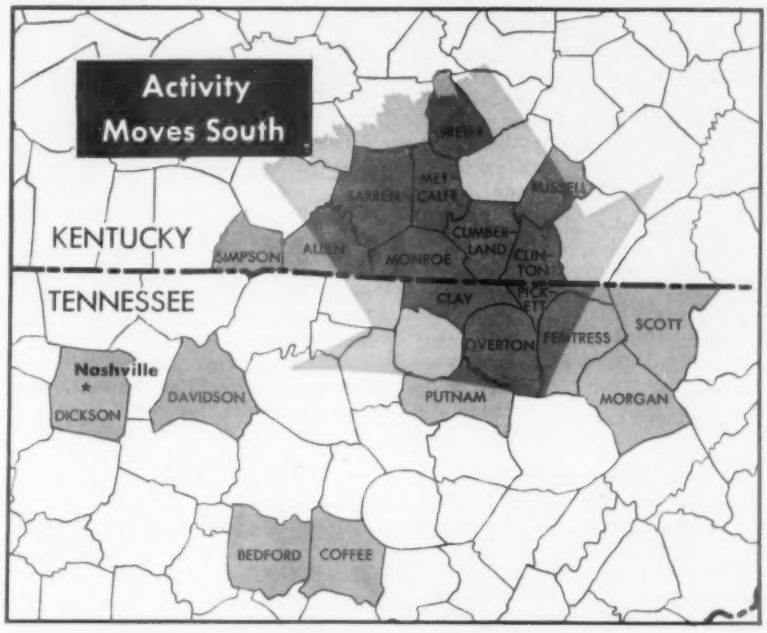
Up in Green County, meanwhile, production is beginning to show signs of leveling off, after a sharp drop since early summer peaks.

There have been virtually no new producers completed in Green County in the past three months. Peak production was reached in May, when more than 46,000 b/d was produced.

Ashland Oil & Refining Co., principal crude buyer in the area (over 90%), is running less than 25,000 b/d through the 6-in. pipeline it completed only last March.

During the peak period of early summer, Ashland was running the pipeline near its full 40,000 b/d capacity and was augmenting its take by trucking an additional 10,000 b/d or so. Now only a few scattered leases are still being serviced by trucks, with the bulk of crude moving up the line to Louisville.

Some of the crude is being proc-



HEAVY ACTIVITY ignited by Kentucky's Green County has pushed into southern Kentucky and over the border into Tennessee, where a record number of rigs are working.

essed in Louisville, where the company reactivated the old Aetna refinery, with a throughput of from 6,000 b/d to 7,000 b/d. The remainder is barged up the Ohio River to Ashland's refinery at Catlettsburg.

The company only a few weeks ago purchased Louisville Refining Co.'s Louisville refinery, with a capacity of around 9,000 b/d. This refinery will be used to process Green County area crude, further reducing the amount barged to Catlettsburg. Ashland is reported considering expanding capacity of the Louisville refinery.

Some Kentucky oil men maintain stoutly that Green County's boom has not petered out; others are equally convinced that the county "has had it."

Manning Taylor, of Taylor & Lyne, a Russellville (Ky.) firm, says, "Our experience and that of others indicates that there is no truth to the report that the Green County field is fading."

Taylor was referring to the recent completion of a 100 b/d well on the Franklin-Russellville highway in Green County by his firm.

This, however, is one of the few new producers reported from the county in recent weeks. One fact is indisputable: There has been a fall-off in over-all production in the county since May, with a corresponding increase in the hunt for oil in counties lying to the south, toward Tennessee (PW—May29'59,p32).

Some oil men contend that the lack of state regulation is a prime reason behind the drop in Green County production. But others, particularly the independents, while generally agreeing to the need for some controls, definitely oppose proration.

"Controls are for the major companies," says one independent. "They'll put us little guys out of business."

A Colorado geologist working in the area says, "When you start drilling in Kentucky, you just have to throw away the book. There are no logs, no samples, nothing to guide you."

Some independents believe imposition of proration would shut off new exploration. "Give us a chance to explore and prove the value of the oil fields before you start limiting us," says one operator.

Several operators believe that lack of proration and other controls has led to over-drilling, with holes "being punched all over the place, and completed wells being run wide open, without regard to sound reservoir practices." This, they add, is what has led to the sharp drop in current production.

The Kentucky Oil & Gas Assn. has submitted proposals for controls to the Legislative Research Committee. These proposals call for drilling permits, plugging procedures, and spacing rules.

It's likely that some form of controls will be adopted. But proration, at least at this stage, apparently is not in the cards.

Lack of proration has been, of course, a big factor behind the "invasion" of Kentucky by out-of-state operators, particularly from Texas and Oklahoma.

Russell, Clinton, Cumberland, Metcalfe, Monroe, Allen, Barren and Simpson Counties are areas of current operator interest in Kentucky.

Operators in the southern tier of counties, below Green County, are not faced with the water problems that plague Green County producers. There are occasional problems, however, caused by swelling bentonitic formations.

C. M. Linehan and H. W. Stoltenberg, Midland (Tex.) operators, completed a Simpson County well recently after it flowed 30 bbl. to 35 bbl. of oil per hour for 6 hours before it was brought under control. At last report, the 497-ft. well was yielding 35 b/d on the pump. A 493-ft. offset to the west, completed in late October, is yielding 5 bbl. per hour on the pump.

Solar Petroleum Co. is producing an average of 325 b/d through 2-in. tubing on a well brought in originally for 400 b/d near Edmonton, Metcalfe County, early in July. But this 224-ft.-deep success was followed by five dry holes in offset efforts. Other spectacular shallow discoveries have been made in the county.

In Allen County, about 40 rigs are currently active in the search for new oil. And some wells that produced heavily 40 years ago are now yielding from 5 b/d to 25 b/d under waterflood.

One pair of operators, Fount Hunt, of Scottsville, Ky., and Ralph Smith, of Mt. Carmel, Ill., completed 10 producers in 12 attempts, all from 189 ft. to 260 ft. in depth. Production on the lease is averaging 1,800 bbl. per month. The pair was completing another well at last report.

In the Willis Creek area of Clinton County, four companies have hit 37 producers in 39 attempts.

In Russell County, Holden Petroleum Co. has drilled some 20 tests, of which six are now producing. The best of the wells was completed in mid-August for 465 b/d at 501 ft. Production has slowed to a steady rate of from 25 b/d to 35 b/d.

The story is much the same in the other counties, where virtually all leasable areas have been snapped up.

In the Paradox Basin . . .

Pure Wildcat Spurs Land Play

Pure Oil Co.'s recovery of oil and gas from the Devonian and Cambrian formations at its Lisbon Valley wildcat in Utah's Paradox Basin has added new zest to the already-lively land play in the area.

Pure's No. 1 Northwest Lisbon, section 10-30s-24e, San Juan County, Utah, recovered 7,500 ft. of 43.5-gravity, 65-degree-pour-point oil, and 500 ft. of heavily oil- and gas-cut mud on 75-minute drillstem test at 8,261-382 ft. in the two formations.

Six earlier drillstem tests—five in the Mississippian and one in the Devonian—covering various intervals between 7,543 ft. and 8,126 ft. indicated gas production of about 45-million cf/d (PW—Nov.20'59,p28).

These tests plus the latest test indicate a total of nearly 1,000 ft. of oil and gas pay in the Mississippian, Devonian, and Cambrian formations. Pure, at last report, was running logs at 8,440 ft.

The most noticeable push in the leasing activity generated by the Pure wildcat is in the Colorado portion of the basin. In Utah, where most of the acreage is already leased, land activity has taken the form of deals.

An example is Belco Petroleum Co.'s recent commitment to drill three wildcats in the Northwest Lisbon area on land held by Lewis H. Larsen, of Salt Lake City.

Belco also will drill two more wildcats on nearby land held by Jupiter Oils.

Pure's wildcat is on the northwest end of the Lisbon Valley-Dolores salt-core anticline—one of several such structures in this part of the basin.

A substantial exploratory program is expected to be aimed at a new examination of the salt anticlines in the area, which in past years have been tapped by scattered tests that rarely penetrated as far as the Mississippian.

Mobile Breakwater Is Being Tested

A new structural concept for minimizing effects of wave action at sea —a design born of military necessity —could have a far-reaching impact on offshore petroleum operations.

The U.S. Army Corps of Engineers has been seeking some kind of portable structure to protect beachhead unloading facilities during the critical logistical buildup phase following an amphibious landing.

A new type of structure developed specifically to provide a portable breakwater for such operations is now being tested by the Army Engineers' Beach Erosion Board, at facilities near Washington, D.C.

Tests of this prototype structure will provide engineering data for construction of a full-sized unit.

But the petroleum industry may reap the benefits, as well.

Basically, the design is a simple one—an inclined "wall" braced by a grid-like base made of tubular pipe. Called the "Sea Raft Prefabricated Mobile Breakwater," the structure was developed by Sea Raft Corp., of Houston.

The wall consists of 3/16-in. steel plate inclined at an angle which is dictated by such factors as the maximum depth of water in which it will be used, probable maximum wave height, and estimated wave-mass loading. Ordinarily, the angle probably will be from 20 degrees to 40 degrees (top drawing, right).

The wall is fabricated to the grid-like base with tubular riser columns serving as support for the wall. The wall rises for some distance above the maximum height of the waves to be encountered.

The base has mud-skirts to prevent scouring action.

The principle employed also is simple. The design harnesses the energy generated by the wave to perform two important functions. First, it causes the wave to expend itself harmlessly by flowing up the wall.

This principle contrasts sharply with the impact method employed in most breakwaters.

Second, the weight of the water mass on the wall exerts a downward force on the grid base, adding to its stability and immobility.

This action prevents lateral movement or shift of the structure.

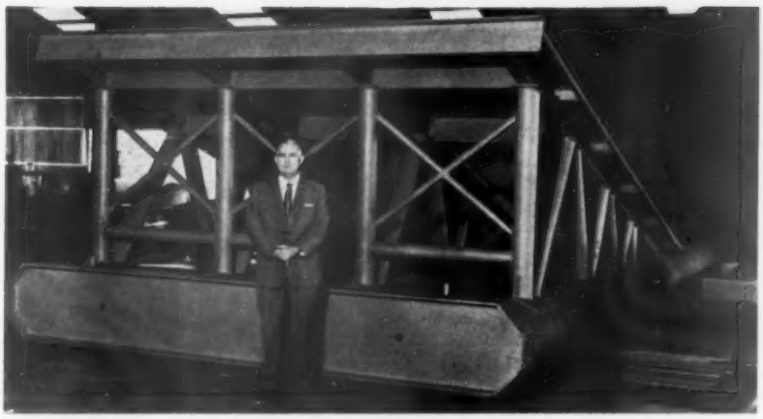
Actually, says A. L. Smith, Sea Raft president, "the higher the wave action, the more secure the structure becomes on bottom, due to the additional weight of the water on the angled wall above the normal water level.

"Underwater movements are likewise blocked out and expended on the wall. Currents and tides may be deflected to control silt and sand deposits."

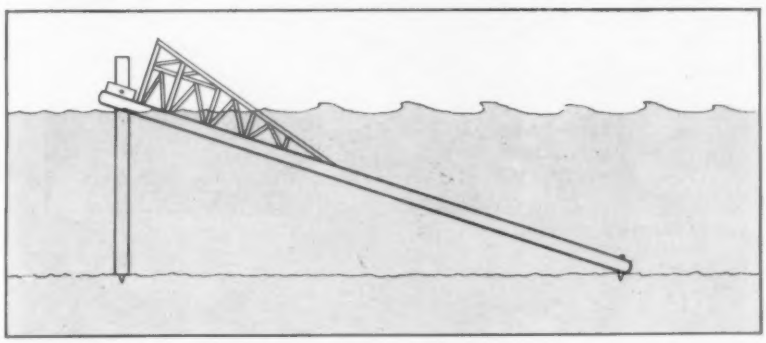
Because of the buoyancy of the tubular structural members, the unit can be towed to location and submerged there. Later, it can be refloated for use elsewhere.

The size of these tubular members can be varied to provide buoyancy for virtually any size structure.

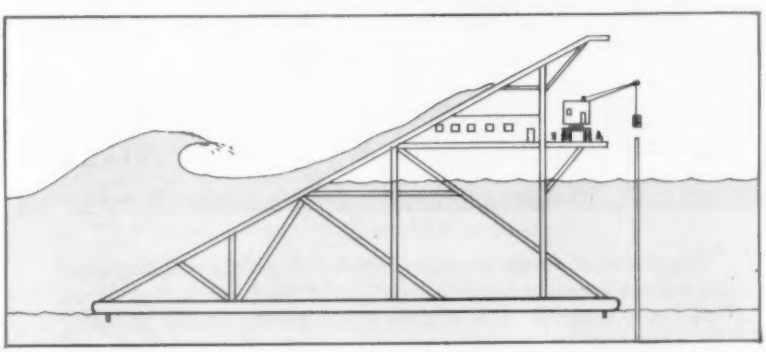
The buoyancy factor of this raft-like base is "generally 200 tons to 600 tons net," says Smith. It is fabricated of tubular pipe with wall thickness of ⅜ in. to ½ in. and diameter of 3 to



A. L. SMITH, president, Sea Raft Corp., Houston, stands before a section of portable breakwater developed by the company. The section is part of a test unit.



ONE VERSION of the "Sea Raft Prefabricated Mobile Breakwater" would be floated to location and one end sunk to the ocean floor. It can be refloated when needed.



ANOTHER VERSION shows how crew quarters, equipment, and the like, can be built onto a giant breakwater unit, permitting continuous activity despite heavy seas.

6 ft., depending upon the buoyancy required. The unit is sunk, sidewise or endwise, on location by flooding these members with water. Divided compartments provide considerable control during submerging or raising.

The structure is raised by using air pressure or pumps to displace the water in the tubular members.

Other than air compressors or pumps, "no machinery of any kind is used to lower or raise the structure," Smith points out.

The basic structure can be modified in several ways to provide specialized versions for specific uses.

The prototype being tested now actually incorporates two angles for the wall, the higher one sharper than the lower.

On location, hollow tubular legs, swivel-attached to the rear of the grid base, would be dropped to vertical position. The front of the wall would be lowered first and allowed to anchor itself to the bottom. Then the rear of the base would be lowered until the legs anchored themselves.

Smith says that structures could be built to house any combination of crew quarters, machinery, and the like (nestled between the support members under the wall), for such activity as platform construction or drilling operations (bottom drawing, page 27).

The size of such units is apparently limited only by practical considerations.

The varied number of possible offshore applications are obvious.

Portable breakwaters could be placed seaward of drilling platforms to permit continuous drilling in rough weather.

They could be used to protect derrick barges during platform erection.

Suitable versions might even be used during offshore pipeline construction. (Army engineers believe such structures, leap-frogged by segments, might aid considerably in dredging operations.)

But probably the most important offshore use could be for the protection of production platforms to permit the loading of barges in the face of high waves.

Various types of break-water might be built as integral components for any of these phases of offshore operations—becoming drilling platform, derrick barge, pipelaying barge, or production platform, as the case may be.

Its capabilities for exploratory drilling are particularly intriguing.

Constructed as a mobile submersible drilling platform, the structure could be left on location in the event of a discovery, with the crew quarters, derrick, machinery, and such transferred inexpensively to a similar structure for additional drilling elsewhere.

The original mobile structure would then become a fixed production platform, offering rough-weather protection for barge loading.

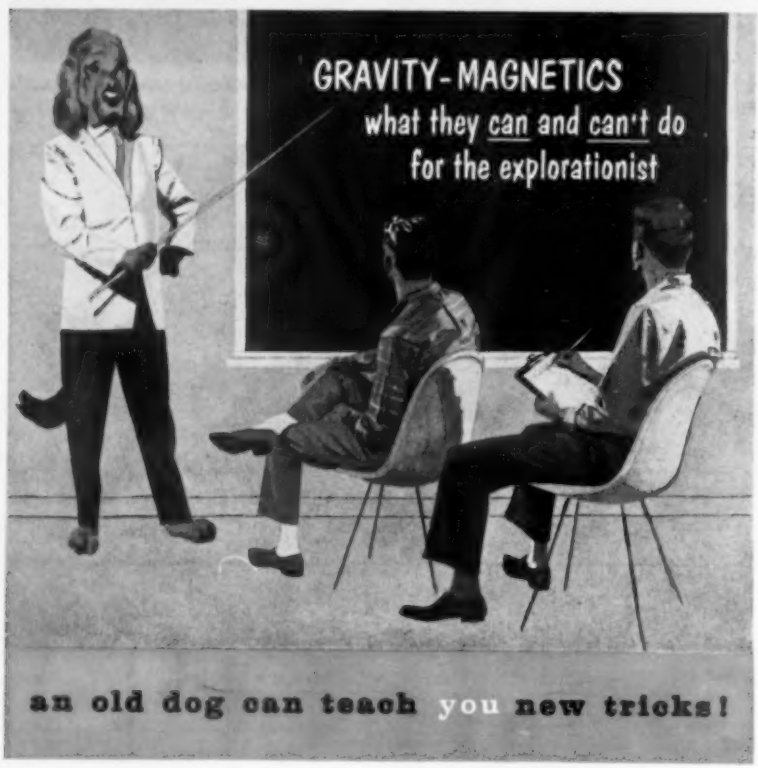
If the test were dry, the structure could be refloated and towed to another drilling location.

Exact costs would depend on the type and size of structure to be built. That, in turn, would be determined by the nature and place of use. But the developers say that construction should be relatively inexpensive.

The smaller versions, Smith says, can be built for as little as $75,000. A larger one, for use in 50 ft. of water, probably would run to around $300,000 or $400,000.

This would be the cost of the basic structure. The ultimate price for a mobile drilling platform or derrick barge would, of course, also include the installation of equipment.

Smith is confident that such structures would be far less expensive than comparable conventional models built for the same purpose.



"Dog-eared" is a term sometimes applied to gravity and magnetics as exploration tools, but these "old guard" methods of exploration can teach many of us new tricks about getting certain prospects surveyed quickly, efficiently and economically.

A number of tails began wagging after explorationists stood up on their hind legs and took a new sniff at prospects via the gravity-magnetics route. If you are interested in cutting costs, while answering specific geologic questions, give us a whistle and we'll trot out our new Bulletin GM59-1, **"Gravity-Magnetics . . . what they can and can't do for the explorationist."**

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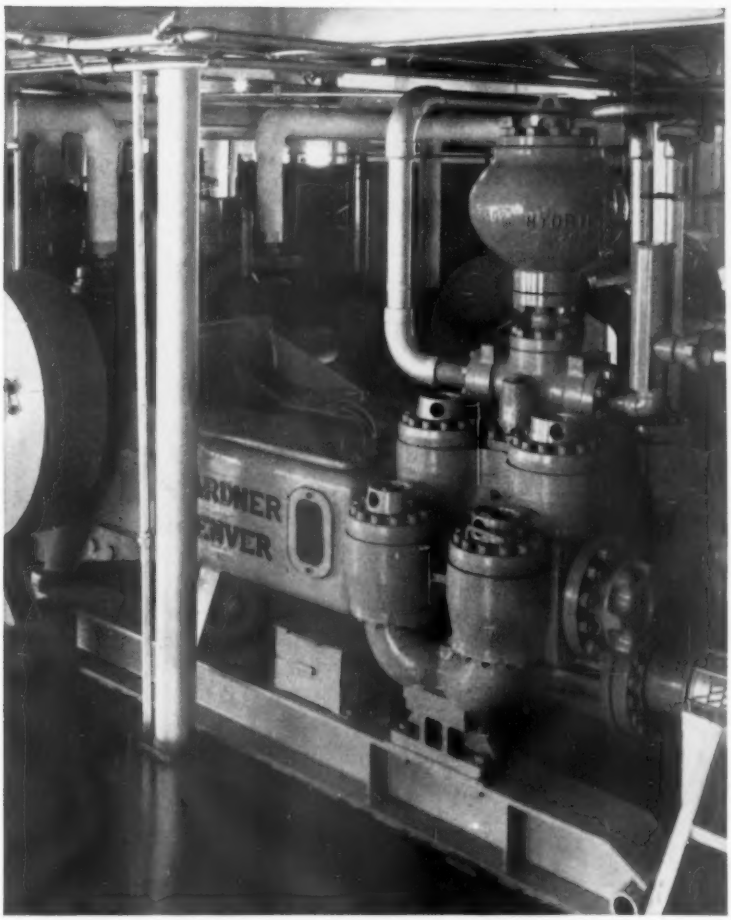

No one needs to worry about sudden pump failure when Gardner-Denver GX pumps handle the drilling mud. That's why most of the big offshore rigs carry Gardner-Denver pumps.

They're built to take the high pressures and shock loads of deep well drilling. Rigid frames. Eccentric construction with large-area, pressure-lubricated bronze bearings.

Consult with the Gardner-Denver man about your mud pump needs for today and tomorrow.

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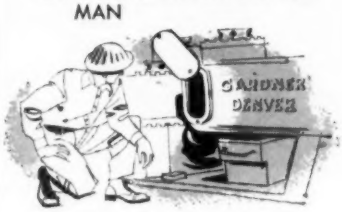

Your Gardner-Denver oil field specialist is trained to assist in solving your fluid circulation problems . . . to help keep your mud pump in tiptop shape. At Gardner-Denver *there's no substitute for men*—our 100-year philosophy of growth.

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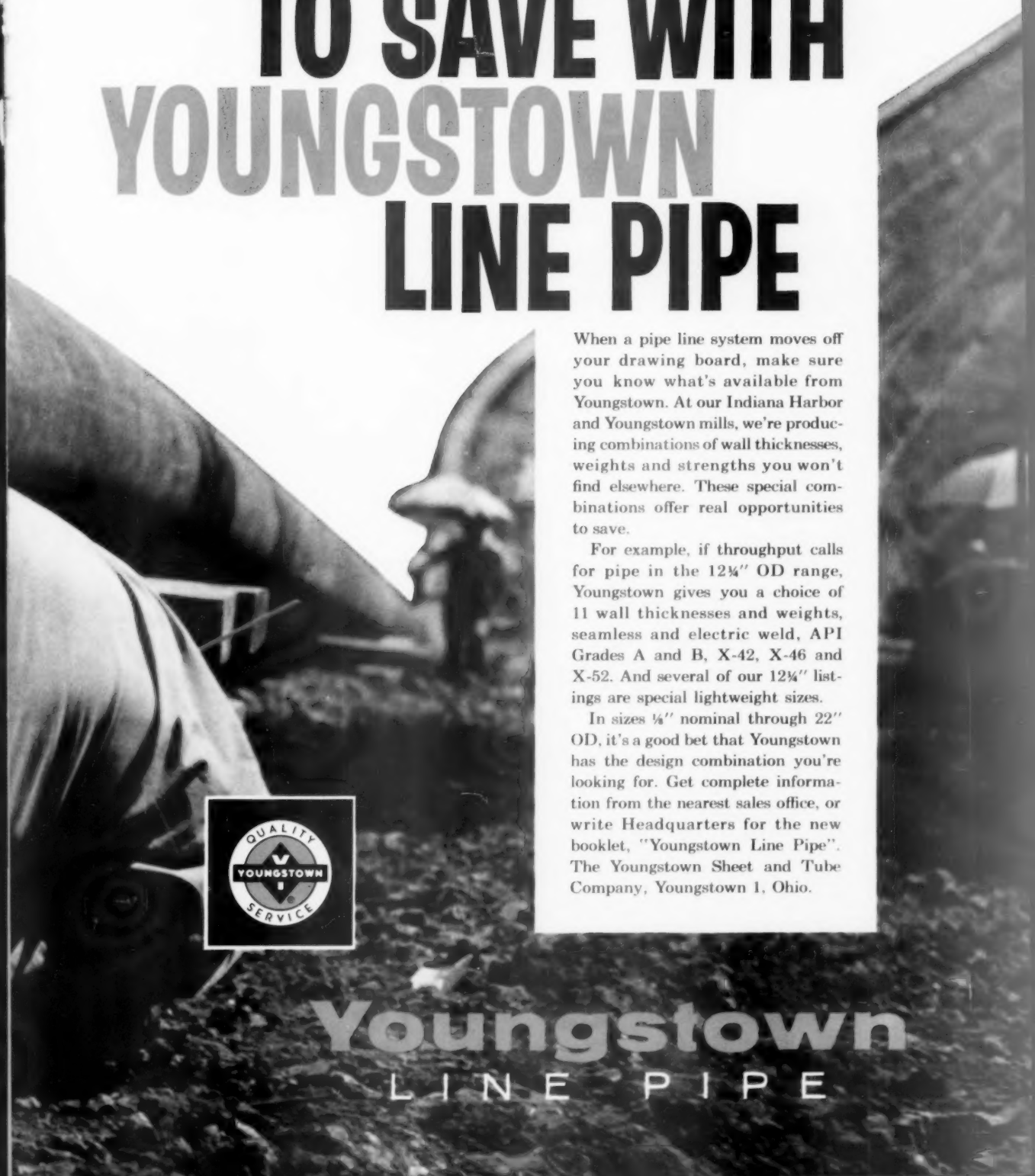
NEW WAYS TO SAVE WITH YOUNGSTOWN LINE PIPE



When a pipe line system moves off your drawing board, make sure you know what's available from Youngstown. At our Indiana Harbor and Youngstown mills, we're producing combinations of wall thicknesses, weights and strengths you won't find elsewhere. These special combinations offer real opportunities to save.

For example, if throughput calls for pipe in the 12¾" OD range, Youngstown gives you a choice of 11 wall thicknesses and weights, seamless and electric weld, API Grades A and B, X-42, X-46 and X-52. And several of our 12¾" listings are special lightweight sizes.

In sizes ⅛" nominal through 22" OD, it's a good bet that Youngstown has the design combination you're looking for. Get complete information from the nearest sales office, or write Headquarters for the new booklet, "Youngstown Line Pipe". The Youngstown Sheet and Tube Company, Youngstown 1, Ohio.

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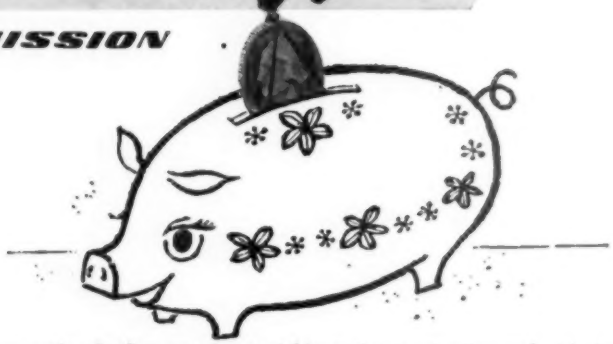

In transporting, hauling, spraying, aerial inspection, construction work, stringing wire, or at nearly any job, the turbine-powered ALOUETTE II — operating in heat or cold, at high or low altitudes — SAVES DOLLARS.

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Exploration Up in Canadian Maritimes

Canada's three Maritime provinces—Prince Edward Island, Nova Scotia, and New Brunswick—are enjoying a modest surge in exploration activity.

Three companies are actively engaged in hunting for oil in the area, and a fourth is producing from the small Stony Creek field in New Brunswick.

Imperial Oil Ltd. has just started drilling on Cape Breton Island, Nova Scotia.

Mobil Oil of Canada, Ltd., which also holds exploratory interests in Nova Scotia, has been conducting aeromagnetic surveys on Sable Island, a 23-mi.-long sand spit about 180 mi. east of Halifax, Nova Scotia.

And last summer, British American Oil Co., Ltd., moved onto Quebec's Gaspe Peninsula, just north of New Brunswick, with an exploration permit covering a large tract in the southern portion of the peninsula.

New Brunswick Oilfields, Ltd., is currently producing about 135.4-million cu. ft. of gas and 17,754 bbl. of oil per year from Stony Creek field.

The readily available market in Quebec and elsewhere in Eastern Canada entices operators to challenge the poor success record compiled in the area so far.

Production, however small, would be profitable, say operators, since the potential market in eastern Canada amounts to about 300,000 b/d.

"Any oil we find here will have an immediate market in the refineries close at hand," says G. L. Colpitts, production advisor with Imperial.

"Anything we find would back out imported crude."

All three provinces have experienced intermittent and unsuccessful drilling efforts dating back to 1894.

Present activity in the three provinces ranges from geological surveys to exploratory drilling.

British American this past summer conducted extensive geological surveys on its acreage on Gaspe Peninsula.

No drilling program has yet been announced, however.

Just north of the BA holdings, Associated Developments, Inc., drilled two dry holes this year.

Mobil, at last report, was finishing its aeromagnetic survey on Sable Island. Almost the entire area surveyed lies under water from 10 ft. to 60 ft. deep, a factor leading to the area's reputation as a ship's graveyard.

Mobil says earlier geological studies of the area indicate the possible existence of a basin with up to 15,000 ft. of sedimentary deposits.

Imperial's Cape Breton test—No. 1 Imperial-Mabou—is about 5 mi. south of the village of Mabou, on the west side of the island.

The company's current exploration program began in 1956, when geological and geophysical surveys were started on Prince Edward Island. The program spread from there to include all three provinces.

Earlier geological studies on Prince Edward Island had suggested oil and gas possibilities in rock formations near Wellington.

Since 1956, Imperial has drilled nine dry holes in Prince Edward Island and New Brunswick.

Imperial's last dry hole, which was abandoned at 3,025 ft., was drilled near Port Elgin, in New Brunswick.

The current campaign has seen air drilling introduced to the Maritime provinces.

Imperial, seeking faster sample returns in drilling and longer bit life, started experimenting with air drilling in its No. 1 Imperial-Pollett, in the Petitcodiac area of southeast New Brunswick.

Because wet rock was encountered, the company didn't start using the air until the hole was 1,500 ft. deep.

In an Alberta Field . . .

Operators Prefer Gas Over Oil

Operators in Alberta's Homeglen-Rimbey field are asking the Oil & Gas Conservation Board to reclassify it as a gas field with oil as "a valuable byproduct."

The field, one of several in the D-3 reef trend in the Edmonton region, presently has 30 producing oil wells and 10 shut-in gas wells.

Original oil in place when the field was discovered in 1953 was estimated at 95-million bbl. Gas reserves are estimated at slightly more than 1-trillion cu. ft. Oil recoverable by primary means is estimated at 6,268,000 bbl.

To get maximum oil production, the operators say, would necessitate the permanent shut-in of the field's large gas reserves, which are much more valuable.

Natural gas in the field out-values oil by 20 to 1, the producers say.

And, they add, since maximum production of both oil and gas is impossible, they must settle for one or the other. In this case they prefer gas because of its higher value.

Plans have already been made for the construction of a $6-million processing plant to prepare the field gas for delivery to the system of Trans-Canada Pipe Lines Ltd. by Nov. 1, 1960.

If the board approves the proposal, it faces the major question of determining the best method for concurrent production of oil and gas to get the most of each.

The operators champion a method calling for gas deliverability of 65.2-million cf/d until Oct. 31, 1961; 71.8-million cf/d for the following year; and a peak rate of 120-million cf/d thereafter.

They say this plan also would boost total oil recovery over the present method by 1.2-million to 2.2-million bbl.

Under this plan—known as Case II—the operators would be permitted to collect and process gas for sale from oil wells in the field, and also to produce from wells completed as potential gas wells.

The oil wells would probably be abandoned in mid-1969.

Alternate plans submitted for the board's consideration are:

Case I—Continued depletion under existing conditions such that oil wells would be abandoned in mid-1969.

Case III—Gas production at 80-million cf/d and abandonment of oil wells in mid-1970.

Case IV—Production of the reservoir at such rates as to stabilize the interface. Gas production would start at 7.7-million cf/d, increasing steadily to 13-million cf/d in 1970, and would stay at that rate through 1976.

The board is said to be giving special attention to this latter method, because it presents conditions for maximum oil recovery during the primary life of the oil zone.

But, say the operators, this would increase oil production over that in Case II by only 588,000 bbl., and would require the unappealing—to them—elements of unitizing for oil recovery only, and "uneconomic" operation of a processing plant for both

NEW WELL LOGGING PACKAGE CUTS COSTS... PROVIDES EXTRA INFORMATION

Continuous chromatographic monitoring and analysis of gas shows . . . *along with recording of principal drilling functions* . . . are combined in Hycalog's new GR-FDR package. And automatic operation permits the use of this equipment with *only one* attendant.

The package includes *two complete recording networks* . . . HYCALOG GAS CHRONOFRAC and a hot wire detector. One monitors methane content of mud gas samples and analyzes shows; the other records total combustible gases.

Added to this is the MARTIN-DECKER recording network which automatically measures and records the following drilling functions: weight on bit, pit level, pump pressure, and pump speed. (Recording of other functions such as torque and rotary speed are optional).

A *single* operator compiles and forwards daily all recorded data along with the log of any shows encountered.

With the new GR-FDR package you are sure of getting *round-the-clock* information at a cost far below regular well logging service.

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BRANCH OFFICES IN PRINCIPAL OIL PRODUCING AREAS

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high- and low-pressure gas. They also seek a unit allowable production rate for the field, and ask that "no gas-oil-ratio penalty be applied against the production of any wells from which solution gas is being collected and processed for sale."

The producers say their plan offers a total value of production considerably higher than do the alternate plans.

Present worth of total production in Case II, say the operators, amounts to $98,818,000. Present worths under the other plans are $65,879,000 in Case I, $87,747,000 in Case III, and $55,320,000 in Case IV.

The total present worth includes the oil, the gas, and the gas byproducts—all discounted at 6% interest.

All recovery figures are based on primary recovery only.

A thick gas cap—280 ft.—and a thin oil sand—24 ft.—are the factors which make it difficult to obtain good oil production from the 12-mi.-long field.

The 16 operators in the field say the expected increase in gas production and the ultimate oil recovery are based on the theory of oil efflux from the field in to a water table.

This is a common water table for a trend of D-3 reef pools stretching 50 mi. from Leduc field to Homeglen-Rimbey.

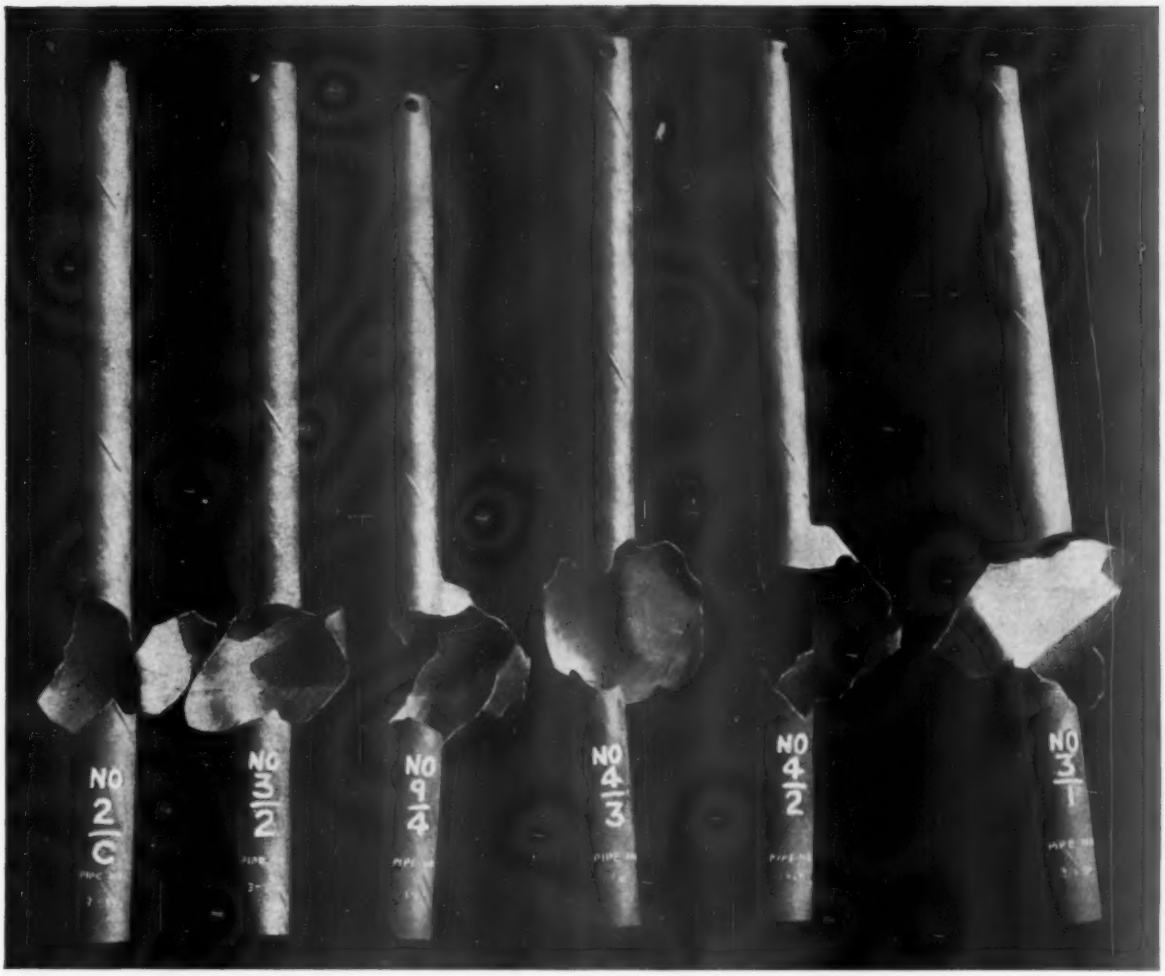
By maintaining the gas production at specific rates, say the producers, this efflux of oil reserves would be held to a minimum, resulting in the maximum recovery of oil in place.

Operators in the field include Amurex Oil Development, Ashland Oil & Refining, British American Oil, California Standard, Calvan Consolidated Oil & Gas, Canadian Oil Companies, Cree Oil of Canada, Dome Petroleum, Hudson's Bay Oil & Gas, Imperial Oil, Shell Oil, Tennessee Gas, Texaco, West Canadian Oil & Gas, Western Decalta, and Western Leaseholds.

California Standard will be operator when the field is unitized.

The outcome of this issue—in which a decision is expected soon—will set a precedent in Alberta.

What makes this case the first of its kind is that Homeglen-Rimbey has been producing for years as an oil field—but now there is a chance to convert it to a gas field and, in doing so, to improve the economics and still offer greater oil recovery than would be realized under present conditions. Another weighty factor in the decision is that there are other Alberta fields like Homeglen-Rimbey, with a big gas cap in relation to the oil.



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This dynamite test was conducted on Armco Line Pipe to determine how the welded seam would hold up under severe shock. Enough dynamite was exploded inside sections of 6-inch, .219-inch wall Armco Line Pipe to almost sever the pipe. Yet the pipe wall and the seams did not open outside the immediate explosion area. This shows that the welded seam resists shock at least as well as the pipe wall. In your pipe line, this means no weak spots, adequate shock resistance to withstand pressure surges and external impacts.

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What's New / IN EXPLORATION, DRILLING, PRODUCTION

Mobil Oil Co. has selected 16 cities as new district headquarters in a major redistricting program of the exploration and production department.

Fred H. Moore, vice-president for exploration and producing, says the 16 cities will have headquarters offices within the jurisdiction of Mobil's new Houston, Midland, and Denver division offices. Houston and Midland also will serve as district exploration headquarters.

The other cities are Corpus Christi, Victoria, Wichita Falls, and Lubbock, Tex.; Lafayette, Shreveport, and New Orleans, La.; Hobbs and Roswell, N. M.; Jackson, Miss.; Oklahoma City, Okla.; Wichita, Kan.; Casper, Wyo., and Pittsburgh, Pa.

•

Computer-controlled automatic drilling equipment could save the petroleum industry around $150-million a year in drilling costs, according to General Electric Co.'s Pete Trenary.

Trenary, speaking in Denver recently before a joint AAODC-ASME meeting, noted that computers could be used to determine optimum bit weight, speed, and similar drilling factors; control mud chemistry under changing conditions; regulate power plants to utilize optimum horsepower; and store information that would aid in perfecting technique with use.

The savings estimate, Trenary said, is based on a potential cost reduction of 15% from a total outlay of $1-billion for contract drilling. And, he added, "from what we have seen of many drilling operations, a cost cut of 20% is well within the reach of this type of control."

Trenary said that a computer-controlled rig capable of going to 15,000 ft. would cost "probably a million dollars, but it would operate with a crew consisting of an engineer and a helper."

•

Need for more revenue to finance various projects has impelled Louisiana to schedule a lease sale Feb. 18, within a few days of a proposed federal leasing of mineral lands.

W. G. Helis, Jr., chairman of the Louisiana Mineral Board, said he believed the timing of the sale to be a "mistake," but that he "went along" with other board members to make the vote unanimous.

A disappointing September sale brought in less than $12-million.

•

The first international symposium on Arctic geology will be held in Calgary, Jan. 11-13.

Participants expected at the meeting, which is being sponsored by the Alberta Society of Petroleum Geologists, include representatives of the Geological Survey of Greenland, U.S. Geological Survey, Institute of Arctic Geology, Geological Survey of Canada, and Geological Survey of Sweden.

Objectives of the meeting are: "To establish contacts and arrange international cooperation between groups working on related projects in the Arctic, and either to publish an international periodical devoted to Arctic or polar geology, or to arrange for regular exchange of summaries on work in progress."

•

North Dakota's Industrial Commission has denied Hunt Oil Co.'s request for 320-acre spacing in the West Tioga area of Williams County (PW—Oct.30'59,p28).

The original field rule of 80-acre spacing will remain in effect.

•

Richfield Oil Corp. (L.A.) has acquired — through farmout — Scurry-Rainbow Oil's 67.5% interest in 3.5-million acres in Canada's Northwest Territories, and has assumed financial responsibility for the company's No. 1 Grandview Hills wildcat south of Ft. Good Hope.

No. 1 Grandview Hills has a projected depth of 6,000 ft. (PW—Sep.4 '59,p25). Work has begun on building a 15-mi. road from the supply site to the drill site. Drilling is expected to start Dec. 15.

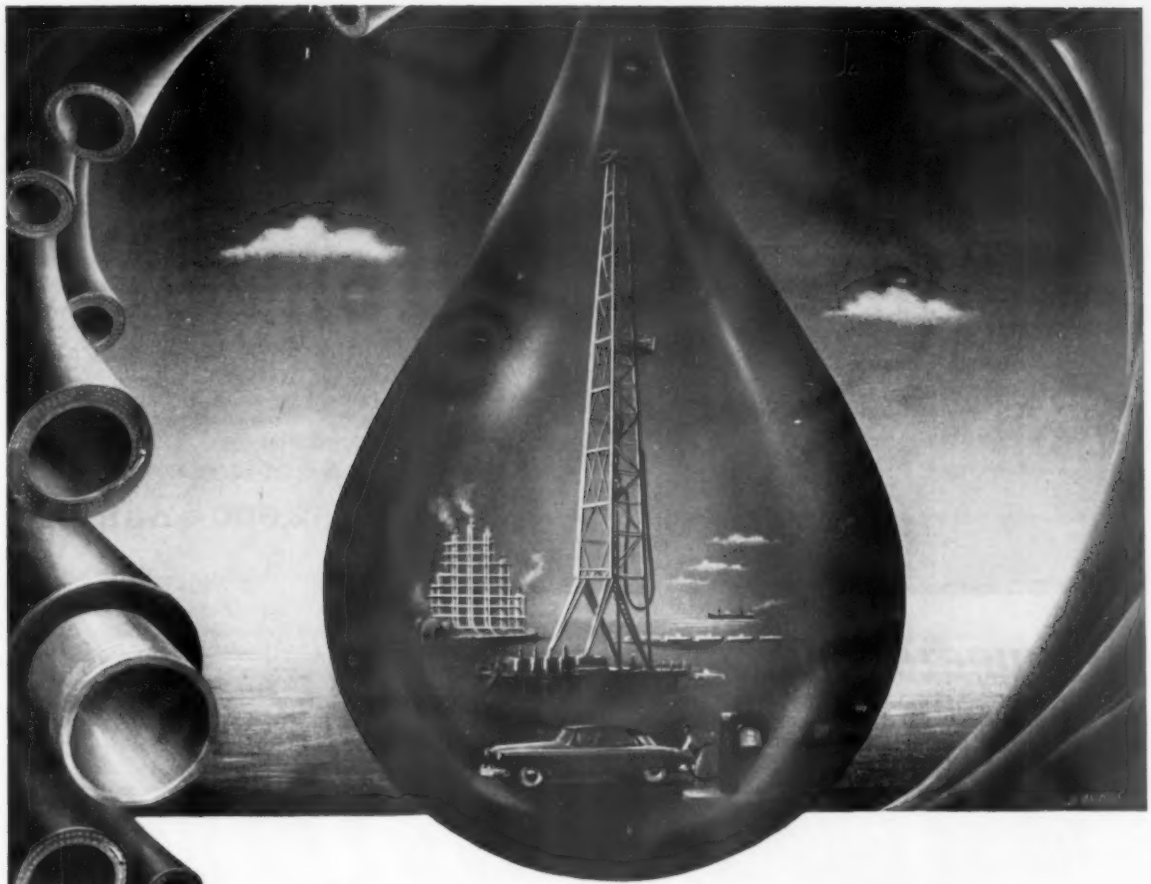
•

Wildcatters, Inc., has announced plans to start an explorations program in Georgia, a state yet to get its first commercial oil or gas well.

The company, a Shreveport-based exploration firm, recently acquired leases on about 100,000 acres in eight Georgia counties—Schley, Randolph, Terrell, Dooly, Sumter, Worth, Turn-

Marsh Buggy Tames Swampy Areas

This "Model 400" marsh buggy was designed and built by Crain Bros., Grand Chenier, La., to be used primarily for oil exploration and as a personnel carrier in swampy areas. The vehicle is equipped with Goodyear Terra-Tires over 5 ft. high and 42 in. wide. When inflated to proper pressures, the tires can float the 4,000-lb. vehicle carrying a 4,000-lb. payload.



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For immediate information regarding specific types of petroleum hose, or any kind of industrial hose, contact your local H-R distributor or write Hewitt-Robins, Stamford, Connecticut. Ask for Bulletin 12-20.

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Well	BEFORE TREATMENT		AFTER KONTOL SQUEEZE TREATMENT	
	Tubing Failures Per Year	Iron Loss (Lbs/Day)	Tubing Failures Per Year	Iron Loss (Lbs/Day)
A	2	3.8	0	0.7
B	2	4.5	0	0.7
C	4	8.8	2	4.3
D	1	10.1	0	0.6
E	1.7	11.2	0	1.6
F	2	8.8	0	0.5
G	1.3	4.7	0	1.0
H	1.5	3.3	0	0.5
	15.5	55.4	2	9.9

another
TRETOLITE SERVICE
report

87% reduction
saves $52,000 annually

Squeeze Application of KONTOL*CORROSION INHIBITOR REDUCES TUBING FAILURES FROM 15.5 to 2 PER YEAR

A corrosion control program employing KONTOL substantially paid off on a Texas lease. Based on the cost of pulling wells and replacing corroded tubing, an average of $4,000 per job, the savings in one year (based on figures in table above) approximated $52,000.

HOW KONTOL PROTECTION WAS ACHIEVED

KONTOL Corrosion Inhibitor was squeezed into the well formations at the rate of 55 gallons per well, followed by 2 quarts of TRET-O-LITE* demulsifying chemical in 15 barrels of oil, followed by oil injection sufficient to displace the liquid in the tubing and force the chemical into the formation. Injection was obtained by means of a 5 g.p.m. triplex pump and 40 g.p.m. centrifugal pump.

COST OF TREATMENT

The KONTOL squeeze treatment cost about 70 mills per barrel of produced oil and 1.9 mills per barrel of fluid produced. This resulted in a treating cost of 17 mills per barrel less than previous corrosion prevention methods.

This is just one of many cost savings stories on KONTOL Corrosion Inhibitor treatment. For more —and information on how to start a KONTOL Corrosion Control Program—ask the Man in the Red Car. Or write to . . .

KF 59-1

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TRINIDAD: Neal and Massy, Ltd., Port of Spain, P.O. Box 544

er, and Tift. The counties are in the southwest part of the state.

Georgia has offered a $250,000 bonus for completion of the first oil or gas well in the state.

•

National Steel & Shipbuilding Co. will build the deck structure for Standard Oil Co. of California's second offshore drilling platform near Summerland, Calif. (PW—Oct.30 '59,p18).

National has just been awarded a $500,000 contract for the job.

The platform, which is expected to be in service next summer, will be located on the 5,500-acre lease operated by Stancal and Humble Oil & Refining Co.

•

Engineering

Technical Oil Tool Corp. (TOTCO) will be national marketer of two new fluid analysis tools—the Densometer and Pitometer—developed by Halliburton Oil Well Cementing Co. (PW—Oct.2'59,p21).

The tools combine to provide a continuous, accurate check on fluid densities and levels during drilling operations. The readings from the tools are recorded on a chart recorder near the driller's console. TOTCO will handle the tools on a rental basis through its organization and its exclusive distributors: Continental-Emsco Co. and Republic Supply Co. of California.

•

Drilling Highlights

West Texas—Humble Oil & Refining Co. No. 1 Annie Spencer, section 68, block B-2, CCSD&RGNG survey, Terrell County, started flowing gas while being drilled at 11,330 ft. in the Strawn. On subsequent 14½-hour test, it flowed an estimated 15-million cf/d through ¾-in. choke. Drilling continues at the wildcat, 1¼ mi. southwest of Wichita Albany production. The hole is being air-drilled with a percussion tool, which reportedly required only 58 days to reach the 11,000-ft. level compared with 200 days for an offsetting dry hole.

New Mexico—Ohio Oil Co. No. 1-NPA State, section 6-19s-35e, Lea County, flowed gas rate of 3,838,000 cf/d plus 40 bbl. of 55.5-gravity distillate on 1½-hour test through 28/64-in. choke and perforations at 12,999-13,151 ft. in the lower Bend. The multipay prospect recovered gas and oil on earlier test of the Brushy Canyon at 6,778-878 ft; recovered oil on two tests of the Bone Springs at 10,138-243 ft.; and again on test of the Wolfcamp at 10,825-60 ft. The wildcat is 4 mi. southeast of East E-K Queen sand pool.

Colorado—Phillips Petroleum Co. No. 2 Desert Canyon, section 11-34n-20w, Montezuma County, flowed 280 b/d of 41.5-gravity oil from 23 ft. of net pay in the Ismay below 5,902 ft. The discovery is 9 mi. east of production in the Aneth area.

Mississippi—Marshall R. Young No. 1 Jourdan Acres, section 35-7s-15w, Hancock County, was completed for an estimated 100 b/d of oil through perforations at 10,291-92 ft. The coastal Mississippi discovery is 16 mi. northwest of Ansley field, which produces gas and condensate.

East Texas—Robert Cargill No. 1 John Thomas, City block 730, A. R. Johnson survey, Gregg County, was completed for 186 b/d of 39-gravity oil through ¼-in. choke and perforations at 7,419-28 ft. in the lower Pettit, a new pay for Willow Springs field, which produces gas from the Rodessa, Pettit, and Travis Peak.

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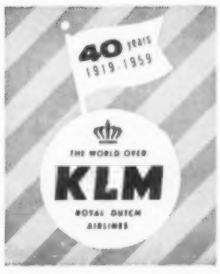

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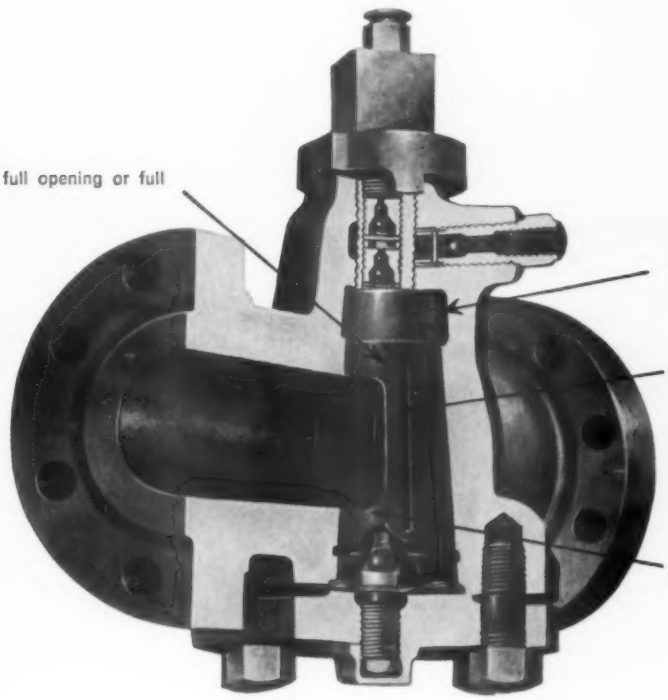
Where control is vital

It isn't just speed and power that wins races . . . it's *control* that makes consistent winners.

It's the same with valves. Valves that are awkward or slow to operate may "lose the race" against impending disaster or costly flow control errors. That's why, wherever flow control must be instantly responsive, you'll see Rockwell-Nordstrom lubricated plug valves. Their *quarter-turn* lubricated closure means perfect control *every time.* The drawing below shows why these valves are so often demanded for the flow control jobs where errors can't be tolerated . . . and why they make flow control foolproof on every service.

PERFECT, FOOLPROOF VALVE OPERATION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Lubricant assures smooth, easy operation.

Rockwell-Nordstrom is the original and world's most complete line of lubricated plug valves with sizes from ¾" to 36" and pressures to 15,000 lb. Available at leading oil field and industrial supply houses everywhere. For details, see your supplier or write: Rockwell Manufacturing Company, Pittsburgh 8, Pa. If you live outside the U. S. A., write: Rockwell International Division, Pittsburgh 8, Pa.

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USS TRADEMARK

More Uses for Petrochemical Adhesives

Research into adhesives gives promise of greatly increased demand for petrochemicals and may open brand new fields for their use.

The new opportunities were described last week to PETROLEUM WEEK by the engineers of two divisions of Battelle Memorial Institute, Columbus, Ohio, that are involved in plastics research. They are the rubber and plastics division, and the organic coatings division.

They are, at present, working on over half-a-dozen adhesive projects for various manufacturers.

Most spectacular development in this field pertains to the application of adhesives to structural construction.

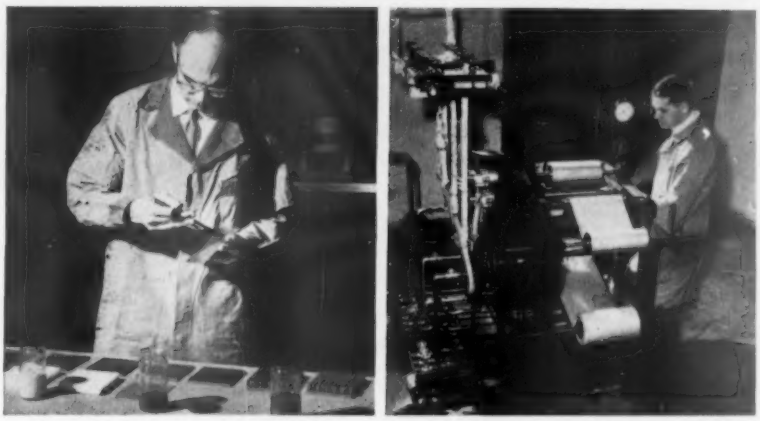
Adhesives have definite advantages, Battelle says, over conventional methods of joining parts, using rivets, screws, and nails. Among them:

- The joining of component parts can be done faster and cheaper with adhesives.
- Stress can be more evenly distributed throughout a structure when its parts are bonded together with adhesives, thus increasing its total strength.
- Surfaces can be kept free from holes and protuberances, and the weight of the structure can be reduced, when adhesives are used. This is of particular importance in aircraft construction.
- Adhesives give a better sealing effect against moisture, gases, or corrosion.
- New shapes can be designed, and new types of composite parts can be made, with the help of adhesives. Among these composites are, for instance, the "sandwiches" of elastomers and aluminum, and several reinforced plastic laminates.

These advantages are being put to good use in the making of automobiles and aircraft, the design of appliances, and in the furniture and home-building industries. In home-building, adhesives come into the picture twice: first in the making of "preformed" wall and roof sections, and second in bonding these sections together, on the job.

The adhesives used in the construction field are principally of the vinyl-base or rubber-base types.

These materials are tough and moderate in cost, and lend themselves to a multitude of combinations with other plastics.



BATTELLE LABORATORIES evaluate a great variety of petrochemical adhesives. At left, technician determines the application of a new bonding compound to various materials. At right, a new laminating adhesive is being studied.

Strangely enough, the greatest obstacle to the development of new construction methods with adhesives is not technological but sociological, according to Battelle. Ways must be found, it says, to point out to those working in the building industry the advantages inherent in adoption of new construction methods and materials.

Another important field for the synthetic adhesives is in the paper industry, where urea resins are now being used as "modifiers" of the conventional starches, or to replace them altogether. They are water-proof, Battelle says, and are resistant to moisture and vapors. Polyvinyl alcohols are also being added to starch adhesives to improve strength and water resistance.

Most important applications in this field are the manufacture of corrugated cardboard, and of stiff paper laminates, widely used today for boxes, and for paper cups and other eating utensils.

Phenolic resins and other new adhesives are gradually replacing older products and conventional manufacturing methods.

- Adhesives made from animal blood, which have been considered the cheapest way to make plywood, are giving way to the tougher, more resistant phenolics, or the less-expensive urea synthetics, where water-resistance and longer life are important.
- Metal pipes can be joined together by a new method involving capillary adhesives. It shows promising advantages over the conventional threading method, and may even eliminate the objectionable internal ridge at the welded joint.
- Contact adhesives, mostly of the rubber type, are becoming increasingly popular, from the application of labels on bottles to the field of interior decorating.

There is an almost limitless number of petrochemical products that can be formulated as adhesives. In practice, however, only a handful is used.

Many products have been found that offer the chemical and thermal resistance, and the great bond strength —as high as 7,500 psi.—that would designate them as excellent adhesives. But considerable experience is required to make the proper selection of the right adhesive for each industrial application, Battelle warns. It is devoting much time to that problem.

Natural and man-made rubbers, alone or in combination with a synthetic resin, are the most versatile adhesives today.

They are being used all the way from the simple, low-strength, "pressure adhesives," such as rubber cement, to the more sophisticated formulas applied to the building of aircraft.

Besides natural rubber—which is very tacky, but deficient in resistance to aging and chemicals—SBR, neoprene, and nitrile rubbers are the most common adhesive bases.

For example, nitrile rubber and phenolic resins are now used for brake linings, clutch plates, and transmission rings, instead of rivets. They

make excellent abrasive binders: In grinding wheels, for example, the well-known hardness of the phenolic resin is tempered with the flexibility of the rubber, to obtain good shock resistance.

After the urea and phenolic resins, the polyvinyls—acetate, chloride, and others—come next in adhesive tonnage.

One of the principal advantages of these vinyls, Battelle researchers assert, is their reasonable price. They come in solid form and can be used either in solutions, water-base emulsions, or films. One of them, polyvinyl butyral, is the adhesive used in the making of safety plate glass.

Vinyl-phenolic resin combinations are among the best for aircraft construction.

And vinylidene chloride polymers make good film-to-film bonding, particularly compatible with the coatings which cover cellophane.

An attempt is being made to use polyvinyl alcohols as a replacement for wax in the manufacture of milk containers. Their high price, however, is a serious obstacle.

Epoxy resins, especially blends of epoxies with synthetic rubbers and with phenolic resins, have found applications as adhesives because of their high chemical and thermal resistance.

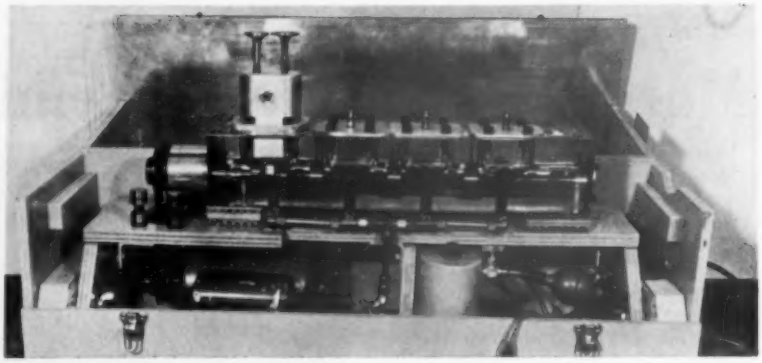
Like rubber, epoxies give the phenolic resins the flexibility they lack. Epoxies are particularly useful as structural adhesives, for metal-to-metal, or difficult wood or plastic, bonding jobs. They are still high-priced, and are used only where cost is a secondary consideration.

With many petrochemical adhesives, including polyurethanes, polyamides, phenolics, and epoxies, the adhesive bond can be considered as chemical, instead of merely physical. When used with elastomers, such as rubbers, an actual "curing" process takes place, and an extremely solid bond is formed, with chemical cross-linkage between the molecules of the adhesive and those of the joined parts.

Polyurethane is a newcomer of great potential, the Battelle engineers say.

There is a strong tendency toward the use of adhesives in water-emulsion form for home applications, for safety reasons.

In industries where fire is a specific hazard, such as the paper and plywood industries, water-dilutable adhesives are favored over those dissolved in synthetic solvents. The latter, however, are still the most popular in the automobile and aircraft industries.



CAM-TRAIN CONDITIONS are duplicated in Sinclair demonstrator; it shows how . . .

Nickel in Lubes Resists Wear

A heavy-duty, multigrade motor oil containing a soluble nickel-salt additive, which is said to eliminate much of the wear on valve lifters and cams, has just been put on the market by Sinclair Refining Co.

Today's high-compression gasoline engines, particularly of the V-8 type, have created a serious problem of wear of the valve rocker shaft, cam, and lifter. With modern compensating hydraulic lifters, this wear is not readily noticeable to the driver; nevertheless, it affects the engine's useful life.

Many metallic salts—particularly the dithiophosphates—have been tried to alleviate that condition; zinc additives are being used today in massive dosages in motor oils. Nickel, however, is a novelty, according to Sinclair, and a much smaller quantity will do the job adequately.

The use of oil-soluble nickel as a possible additive to motor oils was publicly mentioned for the first time by the Russians at this year's World Petroleum Congress.

At that time, however, Sinclair had already been experimenting with its nickel additive for several years, and its new lube was already being tried in company employees' cars. The laboratory work that preceded included, among other tests, 500-hour simulated driving tests in four different engines.

Although the exact mechanism of the nickel-additive oil's protection against wear is not known yet, a tracer technique has established that the nickel penetrates into the metal at the points of critical pressure.

By making the metal-soluble salt in the oil radioactive with an isotope, Sinclair found with a Geiger counter that nickel rapidly localizes its action at those parts of the valve train where the pressure—and consequently the wear—is greatest. These spots are the rocker arm, the cam nose, and the lifter face.

"At these spots," says Dr. A. I. Snow, Director of Nuclear Research at the Sinclair Laboratory, in Harvey, Ill., "the nickel seems to have migrated into the metal: Solvents do not wash it off, it cannot be scraped off with a wire brush, and even sandblasting does not remove it. The spot where the nickel has localized has become tough and wear-resistant."

Sinclair has built a special exhibit to demonstrate the rapid increase in nickel concentration at the points of wear.

In this tester (picture, above), the nickel additive in the motor oil has been rendered radioactive, and the oil is made to circulate over cams and valve lifters. Then pressure is applied in a manner that duplicates engine conditions.

After 30 minutes of running time, the Geiger counter indicates a radioactivity at the lifter face and at the cam nose six times as high as at the back of the cam, showing the rapidity of the concentration of nickel at these points of maximum wear.

These oils come in several multigrade categories, according to geographical location. They have passed both military and automotive industry acceptance tests.

The usual additives for heavy-duty motor oils—detergency, anticorrosion, antioxidant, foam inhibitor, and pour-point depressor—were not removed from the oil when the nickel salt was added, says Sinclair. The new Triple X Sinclair motor oils have passed the MIL-L-2104A, supplement I, specification tests, and the ordnance tests. They have also passed the MS procedure tests of the automotive industry, relative to valve train wear, low-temperature sludge and rust, and high-temperature cleanliness.

What's New / IN PROCESSING AND PETROCHEMICALS

Shell Oil Co. is expanding asphalt facilities at its Norco (La.) refinery.

Plans call for construction of an asphalt blender for mixing two asphalt components, one 20,000-bbl. and two 35,000-bbl. storage tanks, a steam generator for cooling the asphalt for storage, and an insulated pipeline from the blender to the tanks.

The expansion, to be finished next spring, will enable Shell to load asphalt on sea-going tankers for delivery to East Coast markets.

•

Plans to construct a 36-million-lb.-per-year phenol plant in the Pacific Northwest were announced last week by Dow Chemical Co.

The actual site is still undecided, but will probably be on Puget Sound, either near Longview, Wash., or Portland, Ore.

•

Stauffer Chemical Co. will build a carbon bisulfide plant at Delaware City, Del., on property bought from Tidewater Oil Co. Methane for the plant will come from Eastern Shore Natural Gas Co.; Tidewater Oil will supply the sulphur.

•

Phillips Petroleum Co. and Joanna Western Mills Co. have formed a new firm—Phillips-Joanna Co.—to produce polyethylene film.

Linear polyethylene film and conventional polyethylene film in low and medium densities will be produced at a processing plant now nearing completion at Ladd, Ill.

•

Do-it-yourself enthusiasts take note: You can now mix your own urethane foam.

Dayton Rubber Co. has just come up with a kit containing premixed chemical components for creating urethane foam to fill areas as small as a cubic foot.

The user merely combines and stirs the components, then pours the material into the mold or void. Within ten minutes, the material expands to 30 times its original volume, resulting in a lightweight, rigid foam that clings to any surface.

Its natural buoyancy combined with structural strength and rigidity, Dayton says, makes it ideal for filling boat flotation chambers, extending the size of the chambers, insulating cabins, and reinforcing structures.

•

Flexzone 3-C, a new petrochemical said to minimize cracking in tire sidewalls and treads, will go into commercial production next year, according to U.S. Rubber Co.

Laboratory and road tests have shown that the tire chemical increases the tread cracking resistance of truck tires and holds sidewall cracking in passenger car tires to a minimum.

Fluor Corp., Ltd., will engineer and construct a new unit to produce the chemical at U.S. Rubber's Naugatuck (Conn.) plant.

•

Borden Chemical Co. has completed construction of a pilot plant at its Leominster (Mass.) works—the first step in a planned $2-million expansion.

The new unit is designed to produce up to 1,000-lb. lots of polyvinyl alcohol, polyvinyl acetate, acrylics, and butadiene-styrene.

•

Ontario's first alkylation unit for use in manufacturing high-octane gasolines will be in operation early next year at British American Oil Co.'s Clarkson refinery, near Toronto.

The unit, capable of producing 3,000 b/d of motor alkylate, will include a 154 ft. iso-stripper tower to separate high-octane alkylate and unreacted butanes.

Procon (Canada), Ltd., is handling construction.

•

Asahi-Dow Chemical Co.'s $4.4-million styrene monomer plant went on stream last week at Kawasaki, Japan, near Tokyo.

Of the 18,000 ton-per-year output, the company will use 12,000 tons as raw material for styrol plastics. The rest will be sold to Japan Geon as raw material for synthetic rubber.

Lion Oil Makes Propylene Tetramer

Synthetic detergents, manufactured by Monsanto Chemical Co. at Monsanto, Ill., use as one ingredient propylene tetramer produced in this newly completed expansion of the El Dorado (Ark.) refinery of Monsanto's Lion Oil division.

DEPT/Pipelines, Tankers, Storage

Cavern Storage for Liquid Methane?

- **Need for storage will increase sharply, once markets for methane are opened overseas.**
- **Report to AIME says underground storage of liquid methane is cheaper, safer than aboveground tanks.**

If the use of methane as a fuel in energy-deficient countries catches on, space-pressed suppliers might start storing it underground, in liquid form at atmospheric pressure.

The possibility of underground storage of liquid methane is the latest development in efforts to open new markets for the fuel—particularly overseas.

Since almost all methane now used is delivered direct to the users by pipeline, the quantity of methane that needs to be stored is small. Most of it is kept in aboveground tanks.

Plans to supply methane to countries now dependent on coal or coal-made gas, however, promise to boost storage requirements.

Two members of the Texas Petroleum Research Committee recommend mined caverns as the cheapest and safest type of underground storage for liquid methane.

The recommendation was contained in a report to a recent joint meeting of the committee and the American Institute of Mining Engineers in Corpus Christi by Paul B. Crawford, member of the graduate faculty of Texas Agricultural & Mechanical College, and D. W. Flanagan, reservoir engineer with Russell Engineering Co., Abilene, Tex.

They said that liquid methane could be stored in caverns as successfully as liquefied petroleum gas, if certain "bugs" are worked out.

"Methane liquefaction is being considered for tanker transport and, in addition, liquefaction is being considered for shaving peak gas demands," they said. "By storing the methane near the consumption point, one has the ability to increase product availability during periods of need."

A spokesman for Constock International Methane, Ltd., which plans shortly to start commercial overseas shipments of liquefied methane, says the company is definitely interested in the recommendation.

Constock is now storing methane in two tanks on Canvay Island, in the Thames River, near London. Total capacity of the tanks is about 35,000 bbl.

The methane is hauled from Lake Charles, La., in the 2,000-ton experimental tanker, the Methane Pioneer (PW—Sep.25'59,p76).

Within a few weeks, however, the Constock spokesman says, the British Gas Council, half-owner of the Pioneer, will seek government authority to build one 20,000-ton tanker, or two 10,000-ton tankers, on the model of the test ship.

When the big ships are hauling, more storage will be needed in Great Britain.

And Constock plans to build 20,000-ton methane tankers to open other markets in western Europe and Japan (PW—Sep.25'59,p77), which will pose similar storage problems in those areas.

Mined caverns are being considered in Great Britain, if the right formations can be found. And salt domes probably will be used in Europe's Rhine-Ruhr district, once deliveries start there, according to the spokesman.

"Once we start shipping on a large scale, the British Gas Council might go into the method," he says.

He adds that Constock plans to build a pipeline into the Rhine-Ruhr area from a North Sea port still to be set. "We'd have to store the gas somewhere," he adds. "Rather than build tanks at the coast, we'd store it in salt domes."

Reason Constock is looking at cavern storage: It's cheaper.

Cost of mining caverns would be between 75¢ and $1.25 per Mcf., according to the two TPRC men. Tank storage could run between $6.50 and $12.50 per Mcf., says another engineer.

This means that the cost of excavating a cavern with a liquid capacity equivalent to 110-million cu. ft. of gas—the capacity of Constock's two tanks in England—would be about $110,000.

Cost of tank storage of the same capacity would be about $715,000, at the minimum per Mcf. cost.

Both estimates exclude the cost of liquefaction and recycling equipment.

Underground caverns are also said to provide much safer storage than tanks for the highly volatile liquid.

To illustrate the danger of inadequate tankage, Crawford and Flanagan cited the 1944 methane explosion in Cleveland, which took a heavy toll in lives and property.

There, a tank unable to withstand a temperature of —258F (the boiling point of methane) literally disintegrated, spilling its flaming contents over the city.

The fact is that tanks have been vastly improved since then, so that now insurance companies charge the same rates for liquid methane facilities that they do for those used for gasoline.

Because there's always a possibility of a leak in a tank, however, caverns would undoubtedly offer the widest safety margin.

Loss through evaporation would be 700,000 cu. ft. per hour at the end of the first month and 100,000 cu. ft. per hour at the end of 10 years, in a spherical cavern of 100-ft. radius.

A cavern of that size would hold about 4,189,333 cu. ft. of liquefied methane—equivalent to about 2.5-billion cu. ft. of gas.

At the end of the first month, the evaporation rate would be about .0067%. At the end of 10 years, the rate would be about .0009%.

The industry considers 0.25% as the maximum economical loss.

The reason that the loss would drop as time goes on is that the liquid methane itself would cool the surrounding rock.

The industry is not convinced of the practicality of the idea, however. One expert says that if the surrounding rock isn't flawless, the whole cavern might cave in when the cold methane is first injected, as a sidewalk heaves under frost.

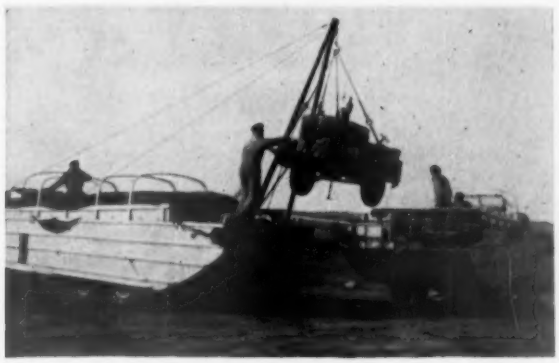
"If you have the right kind of rock, the idea is all right," he says. "What you have to worry about is the first time you freeze it. If there's water around, it may cave in the whole cavern."

Crawford and Flanagan suggested that many types of rock might be favorable for the caverns, including shale, granite, and sandstone.

They see no danger in freezing water.

DRACONES, made by Dracone Developments, Ltd., are loaded with fuel to supply mock landing operation staged by British Army.

DUKWS TOW the filled containers, made of nylon-impregnated synthetic rubber, to landing site.



ON FAR SHORE, pumps and lines are readied to move fuel from containers to waiting equipment and forces.

Floating Tanks Win Wide Acceptance

Collapsible containers, transportation's newest aids, are already solving many difficult problems in the movement of petroleum and products to remote places.

Main advantages of the containers:

- They can be carried by practically every means of transportation.
- Sturdy construction, usually of synthetic rubber and nylon, permits rough handling.
- After being emptied, they can be shipped back in a fraction of the space they occupied filled, or used for storage at their destination.

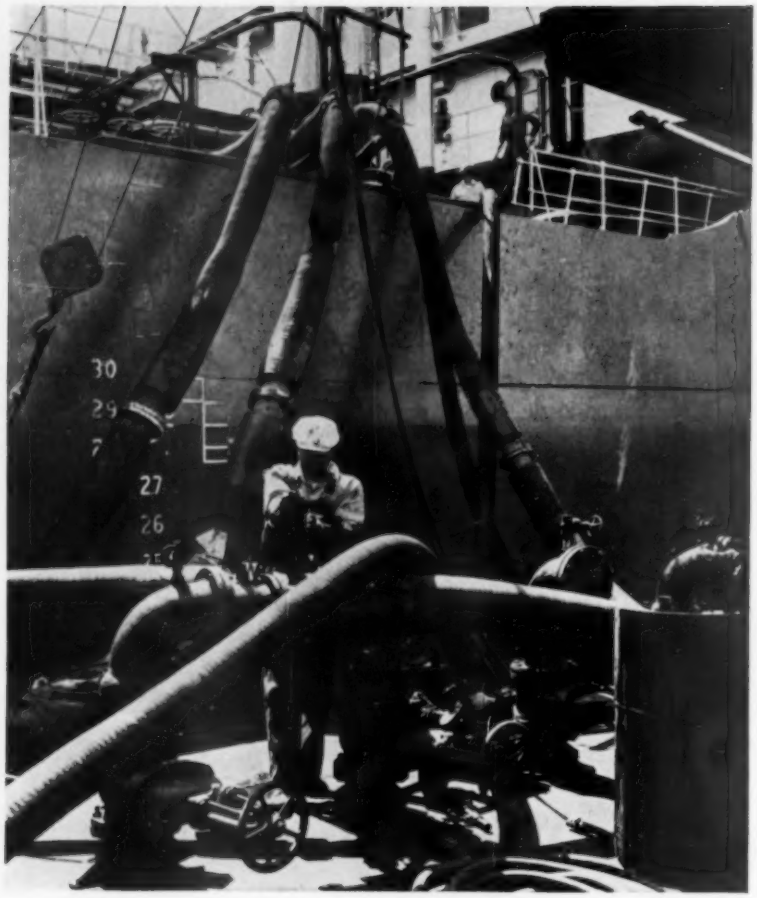
The Dracone, which has passed deep-sea trials with a products load (PW—Jun.19'59,p87), has been tested successfully by the British Royal Army Service Corps for the movement of fuel in a staged landing operation (pictures, above).

Firestone's Fabritank (below, left) was used recently to deliver fuel to a remote mining operation in South America—accessible only by cheap water or costly air transport.

Goodyear's Pillow Tank (below, right), which comes in a 200,000-gal size—the largest made—has been adopted by the U.S. Army Corps of Engineers for offshore refueling operations (PW—Sep.11'59,p44).

FABRITANK, product of Firestone Tire & Rubber Co., moves diesel fuel to gold mine on remote jungle river.

PILLOW TANK, made by Goodyear Tire & Rubber Co., is used by Army Engineers Corps for offshore fueling.



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What's New

IN PIPELINES

Natural gas is now moving into the Chicago area through the third pipeline of Peoples Gas Light & Coke Co., from Joliet, Ill., to Calumet, on the outskirts of the city.

Completion of the 60-mi., 36-in. line was the final step in a major expansion program that enabled Peoples to add 92,000 space-heating customers in Chicago this year.

At Joliet, the line takes gas from the newly completed line of Midwestern Gas Transmission Co., and from a line of Texas Illinois Natural Gas Pipeline Co., a Peoples' subsidiary.

Chicago District Pipeline Co., another People's subsidiary, is operating the $17-million connection.

•

Continental Pipe Line Co. has completed its products pipeline from Artesia, N. M., to El Paso.

At El Paso, the 8,000 b/d line connects with the products line of Southern Natural's 97 customers in six goes to Tucson and Phoenix, and with Standard Pipe Line Co.'s line to Albuquerque.

Continental Pipe Line, a subsidiary of Continental Oil Co., is now finishing terminals at El Paso and Albuquerque to store additional products.

•

Southern Natural Gas Co. is seeking a rate increase of $7,756,563 annually.

The boost would affect all of Southern Natural's 97 customers in six states.

In its petition to the Federal Power Commission, the company said that higher gas costs and expansion make the increase necessary.

•

First steps in the merger of three affiliates of Peoples Gas Light & Coke Co. have been taken before the Federal Power Commission.

The three are Natural Gas Pipeline Co. of America and Peoples' Gulf Coast Natural Gas Pipeline Co., both wholly owned, and Texas Illinois Natural Gas Pipeline Co., which is 70% owned.

The commission was asked to authorize Peoples' Gulf to acquire facilities of Texas Illinois. Ultimately, the surviving company would be merged with Natural Gas Pipeline.

What's in Petroleum Week for Petchem. Plt. Supers?

A PETCHEM. PLT. SUPER, short for petrochemical plant superintendent, finds plenty in Petroleum Week. For Petroleum Week broadens the horizon of more than 45,000 men in the oil industry, at all levels and in all segments. It's the magazine where busy oil men keep informed, where they get up-to-the-minute reports on news, technical developments, and trends that affect their daily activities. Out of this information they acquire the industry perspective so vital to doing a good job.

A good, responsible petrochemical plant superintendent has to keep informed, and that's why he likes Petroleum Week – oil's most readable magazine. He is in charge of the personnel and equipment of a petrochemical unit or plant – normally a multi-million dollar responsibility – and he takes more than a passing interest in the important tools of his trade. Petrochemical plant superintendents are among the many thousand subscribers to PW who are actively and directly engaged in the refining segment of the oil industry.

Whether you want to reach foremen or presidents, technical men or operating men, the pages of Petroleum Week can carry your advertising messages effectively, for all groups of buying influences are covered. That's why more and more companies are placing more and more advertising in this magazine in 1959.

PETROLEUM WEEK

Oil's Most Readable Magazine

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A McGraw-Hill Publication 330 West 42nd Street, New York 36, N.Y.

Petrochemical plant superintendent for independent refiner photographed near Houston by W. D. Murdy.

One of a series of portraits of oil industry management and operating men.

Mattei Adds Libya to ENI Empire

MILAN—Enrico Mattei, controversial boss of Italy's state-owned ENI group, has finally made it into Libya.

It was nearly two years ago that ENI lost out on its first bid for acreage under Libya's 50-50 oil law. At that time, the volatile Mattei blasted off publicly about being "frozen out" of Libya by international majors.

Last week he pocketed Libyan oil rights as the latest addition to his fast-expanding operations outside his empire in Italy.

Mattei told the Industry Committee of Italy's Chamber of Deputies that ENI is now set to explore for oil in Libya—through Cia. Richerche Idrocarburi (Cori). This is a new ENI affiliate in Milan that has just won the Libyan rights in competition with nine other oil companies, he said.

The grant covers 11,583 sq. mi. in Cyrenaica, eastern Libya, 125 mi. inland from the coast. It is separated by an open tract from the Egyptian border, and is surrounded by blocks held by Oasis Oil, the Caltex group, and British Petroleum.

The Libyan government, Mattei announced, has an option to participate 30% in the new oil venture to be undertaken by Cori. The company will pay 17% royalty (instead of 12½%). It has also renounced the 25% depletion provided for in the Libyan oil law.

The government may exercise its option to participate 30% in all phases of the operation and its costs —exploration to sales of crude— within four months after Cori has established commercial production. Cori would recover all costs before the government gets the extra share of profits.

The "option" for government participation is an innovation for Libya and will extend to any further rights ENI may acquire in the former Italian colony.

It's regarded as a special political term, however, and not an indicator that Libya will demand the same provision for future grants to other foreign oil firms.

The oil companies that lost out to ENI in competition for the new Libyan acreage included a private Italian firm, as well as U.S. and European majors and independents.

The Italian bidder was Ausonia Mineraria, oil exploration affiliate of the Edison industrial group, ENI's strongest private rival at home.

Among the other losing bidders: Gulf Oil, Pan American International, Mobil, Shell, and Hunt International, Texas independent.

ENI's pact with Libya is certain to revive the old controversy in Italy on state versus private industry— particularly since Ausonia had filed a prior application for the Libyan acreage in August.

This controversy has erupted periodically around ENI ever since Mattei started his aggressive moves abroad—initially in a search for oil resources, and more recently in a variety of undertakings aimed at establishing ENI as an integrated, full-scale international operator.

Critics in Parliament have contended that ENI should concentrate its exploration efforts in Italy, where it has found little oil, though it has substantial methane production in its Po Valley monopoly area.

Three years ago, ENI's only foreign interests were in Egypt. Today, they have already spread to ten countries on four continents, with no sign that Mattei intends to call a halt to his drive abroad.

ENI now has a variety of stakes in all phases of the oil business outside Italy:

- **In the Middle East:** exploration rights in Iran, where ENI has started drilling both onshore and offshore in the Persian Gulf.
- **In Africa:** Oil production interests in Egypt; exploration right in Morocco, where ENI is about to build a 25,000 b/d refinery; exploration and marketing rights in Sudan, where it has also put in a bid to build a refinery; and now, in Libya, exploration rights.
- **In Europe:** roughly a 50% stake in a major pipeline it will build

Egypt May Open Oil Rights Near Libya

(By cable from PETROLEUM WEEK'S *Middle East Bureau)*

CAIRO—Oil discoveries in eastern Libya, bordering Egypt, have revived oil industry interest in Egypt's vast Western Desert, and Egypt may call for bids there soon. The area is an extension of the Sahara.

A huge concession there was abandoned last year by Sahara Petroleum Co. after four years of work, nine dry holes, and some oil shows. The company, subsidiary of Continental Oil, was operator for Continental, Richfield, Cities Service, and Ohio Oil.

At least five U.S. and European firms are seriously interested in exploring the desert area, according to reliable sources in Cairo.

They are: Pan American International; Atlas Corp., through Panoil Co., of Dallas; Mobil Oil; Italy's state-owned ENI; and Anglo-Egyptian Oilfields, Ltd., a Shell-British Petroleum affiliate.

Egypt's General Petroleum Authority has definitely given up the idea of doing its own exploration in the Western Desert. Its new chairman, Ahmed Kamel el-Badry, is reportedly dividing the desert area between the Libyan border and the Nile Delta into zones and blocks, as in Libya.

Bidding for concession blocks will not be called until zoning is completed and terms set for each zone, according to the interest in the area and its distance from the Mediterranean. Industry sources say that to make the area attractive, Egypt's mining law of 1953 would probably be waived.

Local sources say interested companies are hoping for terms at least as favorable as those in the former Sahara Petroleum concession.

Pan American already has a man in the area for preliminary geologic survey. He is Tom Jones, formerly with Esso of Egypt. Pan Am is interested in the westernmost parts of the desert, close to the Libya border.

Shell and BP managements in London and The Hague have O.K.'d in principle exploration in Egypt by AEO. They have now sent the head of Shell's Hague concession department to Cairo to study Western Desert prospects.

from Genoa to Switzerland to Bavaria, together with a 40,000 b/d refinery definitely set for Switzerland, and another plant at the German terminus that is still in the discussion stage. Also, marketing in Switzerland and Austria, where it is now building its first service stations; and a stake in a drilling contracting firm in France.

• **In South America:** a contract in Argentina to drill 300 wells for the state oil agency.

Meanwhile, ENI has just issued its annual report, showing a $7.4-million net profit for the fiscal year 1958-59. Of this, 65% goes to the Italian Treasury. The report also shows that:

• ENI's methane production increased 2.9% to 4.8-billion cubic meters.

• Its crude output in all Italy creased 59% to 345,405 metric tons.

• Egyptian output by the company in which ENI has a stake increased 137%, with 1,125,000 metric tons imported to Italy.

• Crude throughput in ENI-group refineries (some owned jointly with international majors) increased 3½% to 5.7-million metric tons.

Sinclair Extends Major Oil Trend

Two recent discoveries by Sinclair may nearly double the potential producing area of eastern Venezuela's hottest oil trend.

Last week, Sinclair said it believes its new discoveries prove a "major" continuation of the producing trend.

Reserves of the 100-sq. mi. region are already estimated at between 100-million and 300-million bbl., and over 60 wells have been completed since the initial discovery in 1957 (PW—May3'57,p50). The new area is on the northeast edge of the Greater Oficina producing area, 25 mi. south of Santa Barbara.

Sinclair's East Aguasay discoveries extend the Aguasay trend to a length of almost 30 mi.—and across acreage held by five companies.

In addition to Sinclair, Venezuelan Atlantic, Pancoastal, and Mene Grande (affiliate of Gulf Oil), also have production. Creole, which has not drilled in the area to date, holds the acreage between the existing area and the new discoveries.

The two discoveries stretched the fast-growing trend 11 mi. to the east.

The first discovery, No. 1 East Aguasay, is an 8-mi. extension of the producing area. It was dually completed at the rate of 1,465 b/d (PW—Oct.23'59,p47).

The second discovery, brought in last week, tacked 3 more miles onto the eastern edge of the trend.

The two zones in the No. 2 East Agusay flowed at the combined rate of 1,352 b/d of 32.2-gravity oil from perforations at 14,183 ft. and 14,264-70 ft. Production is the deepest in the area, from sands almost 1,000 ft. deeper than those in present Aguasay wells. Production is from the T-3 sand, one of the Oficina group productive throughout eastern Venezuela.

The discovery ends controversy among geologists about the extension of the Oficina sand series. The sands grade eastward to shale, and many geologists thought the expected pay zone would be tight, and not porous or oil bearing.

Sinclair does not plan to push the development of the area at this time, and will keep only one rig in operation in the Aguasay area, to prove up areas that are unusually complex and present geologic problems.

Since Sinclair already has 20,000 b/d shut in all Venezuela, the new area will be kept as a reserve.

Meanwhile, Mobil will try to extend the trend still farther to the east. A wildcat is tentatively scheduled for Mobil's acreage east of No. 2 East Aguasay.

Mene Grande is continuing to develop the westward extension of Aguasay, with outposts and wildcats. A deep wildcat, 15 mi. northwest of the initial Aguasay discovery, is being tested at about 15,000 ft.

At the same time, Sinclair and Atlantic are going ahead with plans to repressure the producing field. They are doing preliminary engineering for a gas injection plant to increase primary recovery of the field, which is now producing about 13,000 b/d.

Venezuela Praises Oil Firms

CARACAS—**Venezuela's Finance Minister last week gave public praise to the oil companies in Venezuela for the "good relations" between them and the** Venezuelan government.

The Minister, Jose Mayobre, said this is demonstrated by the "dollar accommodation" agreement the oil companies have made to help bail Venezuela out of a threatened dollar shortage. (PW—Nov.27'59,p35).

Though "temporary difficulties" may arise, the Minister said, they "will never prevent a final solution satisfactory to both parties."

He ascribed the possibility of such "temporary difficulties" to differences in points of view between the government and the oil companies. But the "good relations" between them "must always be harmonious."

The Minister said the government is preparing a policy declaration on future development of petrochemicals and iron ore, in consultation with the political parties. He also reiterated the government's policy of awarding no further oil concessions.

The oil companies' new "dollar accommodation" agreement is one of several measures by which the government aims to stimulate Venezuela's economy and halt the decline in its dollar reserves.

Under it, the oil companies have arranged for New York banks to take up a 310-million-bolivar ($100-million) issue of short-term treasury bills. The New York banks will buy them through Venezuela's Central Bank.

The bills will be discounted at up to 6% annual interest. The oil companies will buy them from the New York banks on their maturity dates and redeem them from the Central Bank in bolivars between April and July of next year, when their initial instalments on 1959 taxes fall due.

Companies will subscribe in proportion to this year's estimated tax payments. Creole has announced that it is subscribing $48.8-million, nearly half the total.

The Venezuelan Congress will now be asked to approve a special budget of $243-million, on top of the current ordinary budget of $1.5-billion, to bolster economic activity through public-works spending and credits to private industry.

Venezuela's monetary reserves have dropped sharply in recent months, due to heavy year-end imports and to a flight of capital touched off by fears of currency devaluation. But Mayobre said last week that dollar purchases have returned to a normal level—and announced that there will be no devaluation "under any circumstances."

What's New / AROUND THE WORLD

ARGENTINA—Argentina's oil director last week said Red China, as well as Australia and South Africa, would be among the "natural markets" for surplus crude Argentina expects to have by the end of 1961.

Dr. Horacio Aguirre Legarreta, president of YPF, the state oil agency, estimates output will reach 120-million bbl. in that year. Though Argentina must start looking for markets now, he told PETROLEUM WEEK, YPF itself won't worry too much about marketing crude abroad. This will be taken care of by the private companies operating in Argentina—such as Shell, Esso, and Pan American International—which, he said, have "vast marketing experience abroad."

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INDIA—New Delhi last week took the lid off its restriction on foreign oil capital. It invited foreign companies to join the search for oil in India under a new set of liberalized rules replacing former year-to-year terms.

Oil Minister K. D. Malaviya told Parliament that "great amounts of foreign money" will be needed for India to boost oil output to the target of 280,000 b/d by 1966, from about 10,000 b/d now.

The new rules provide for grants of four-year exploration rights with a two-year extension on 3,000 sq. mi. or more. Development rights would be negotiated on "mutually acceptable" terms.

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VENEZUELA — The government's Petrochemical Institute will import $1-million worth of pipe from Japan. A contract just signed in Tokyo calls for deliveries in January and February of a total 6,150 tons of 8½-in. pipe produced by Sumitomo Metals.

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FRANCE—Soc. du Pipe-Line Sud-Europeen has now been formally incorporated in France to build the 466-mi. Mediterranean-Rhine pipeline for its 16 owners (PW—Oct.23 '59,p46). Initial capitalization was set at $12.1-million.

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MOROCCO—Italy's state-owned ENI is preparing to spud its first Morocco wildcat by the end of this month on its Tarfaya province concession, on the northern border of the Spanish Sahara. Sources in Morocco's Mining Dept. said last week that the site will be in the central part of the tract, which is held by Samip, a joint Italian-Moroccan company.

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JAPAN—A second independent Japanese refiner is starting product exports to southeast Asia. Daikyo Oil is now making a trial shipment to Formosa of 1,761 bbl. of lube oil. Maruzen Oil is already exporting to southeast Asian markets, including Formosa.

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ARGENTINA—Italy's state-owned ENI announced it has started drilling at Meseta Espinosa in the Comodoro Rivadavia area under the 300-well contract it was awarded four months ago by the Argentine state oil agency.

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DOMINICAN REPUBLIC—Petrolera Dominicana is now drilling below 2,000 ft. in a wildcat at Tabara Abajo, about 12 mi. north of Azua, near the Caribbean coast. (PW—Sep.4'59,p45).

A leased rig capable of drilling to 12,000 ft. was recently brought in for the test. Chief stockholders in the Dominican company are Edward and William Pawley (not to be confused with the Edwin W. Pauley interests). Edward Pawley, president, says the company already has one small well pumping a few hundred b/d of high-grade oil, which is being sold for fuel.

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BOLIVIA — The first oil well financed by U.S. capital was officially dedicated last week by the president of Bolivia. The well, which found oil at 13,776 ft., is one of two drilled so far by Bolivian Oil Co. on its Madrejones contract area along the Argentine border. The company is owned by Fish Engineering, North American Utility, and others.

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MALAYA—Standard Vacuum proposes to build the first refinery in the Malay Federation under a $32.2-million program submitted to the government last week. The plan also includes a chemical fertilizer plant, to be set up in association with Wah Chang Corp., of New York.

Stanvac, like Caltex and Shell, at present only markets in the Federation, an independent southeast Asian nation within the British Commonwealth.

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Wildcats in the News

BRITISH HONDURAS—Wildcatting has stopped now that Phillips has abandoned its second test, No. 1 Machaca, 6 mi. west of Punta Gorda. The company will continue seismic work on its 2-million net acres. The Gulf-Shell group, only other present operator in the country, suspended drilling earlier this year.

IVORY COAST—SAP, French operator for acreage it holds with a U.S. group headed by Plymouth Oil, found small shows of gas in its first test, southeast of Abidjan. The wildcat was suspended at 12,921 ft. A second test, 30 mi. west, is being drilled below 3,250 ft.

LIBYA — Esso has spudded its fourth wildcat to delineate its big Zelten discovery in Libya. The No. 4 Zelten is 4 mi. west of No. 3, which found oil in a second horizon last week.

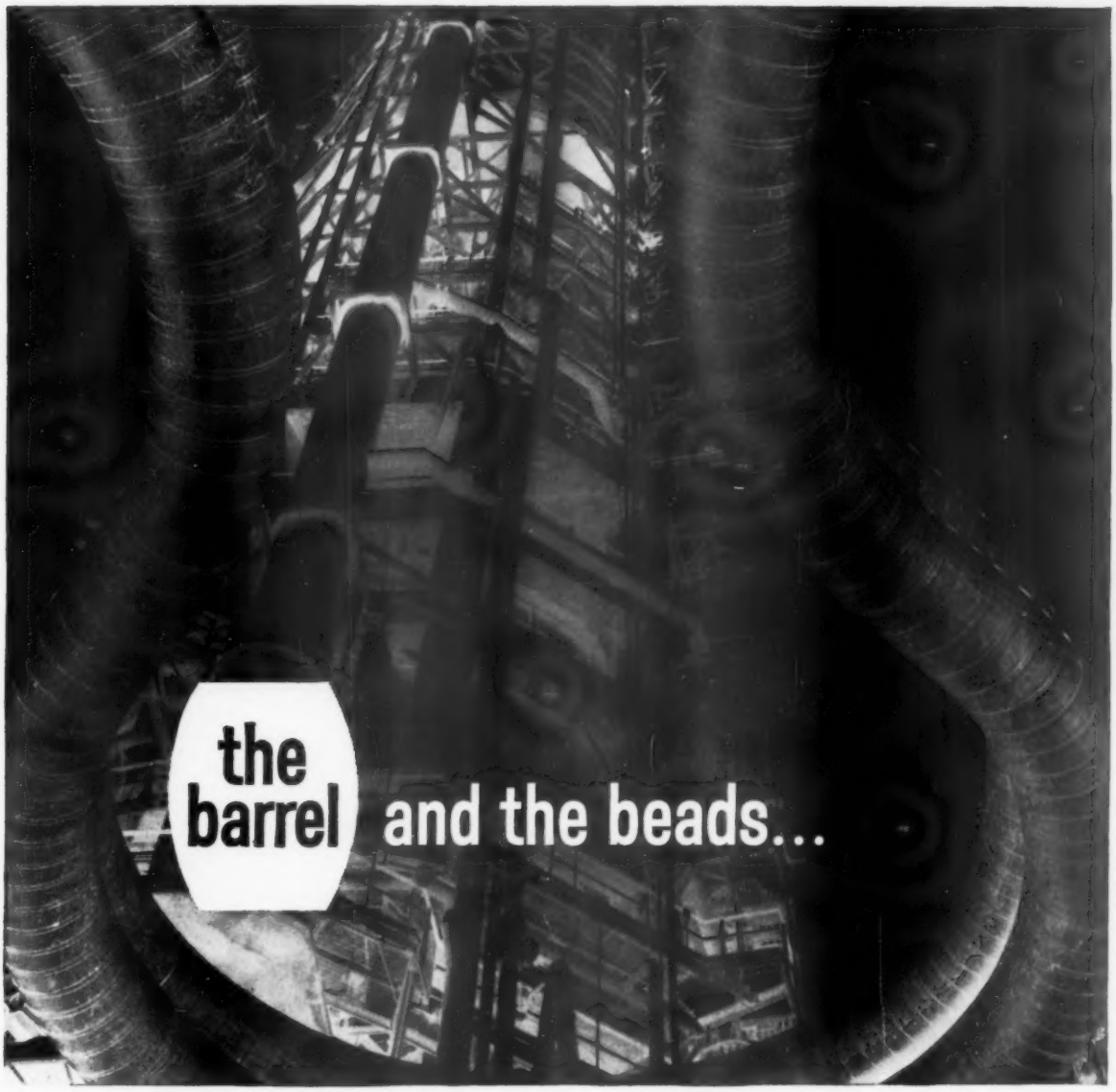
VENEZUELA—Pan American has spudded No. 1 Gopa as its first offshore wildcat in Venezuela's Gulf of Paria. It is being drilled from a fixed platform in 84 ft. of water. Target is 10,000-12,000 ft.

Mideast Oil Output Sets New Record

Oil output in key Middle East producing states hit a new record in October, topping 4½-million b/d for the first time. It was a 24,100 b/d gain over the previous high last April.

The totals, in 000 b/d:

	Oct. '59	Oct. '58	Sept. '59
Kuwait	1,411.8	1,484.3	1,298.3
S. Arabia	1,066.2	1,045.4	1,055.8
Iran	942.0	811.0	1,005.0
Iraq	912.3	814.1	912.5
Qatar	173.1	165.0	181.1
Total	4,505.4	4,319.8	4,452.7
10-Mo. Avg.	4,386.4	4,086.2	



How to get more yield from a barrel of crude for less cost—the new bead catalyst that makes it possible—what it means to the petroleum industry

Petroleum refiners around the world have always had one common economic objective—to get more yield from every barrel of crude oil at lower cost.

Socony Mobil's contributions toward this goal have been outstanding. From the development of the first Thermofor Catalytic Cracking unit and its successor, the Airlift TCC, to the introduction of Durabead, the most efficient, cost-cutting bead catalyst today, Mobil Catalyst Research has led the way in pushing yield levels ever higher, yield costs ever lower.

Now Mobil takes the lead again with Heavy Durabead, a new bead catalyst with all the features of Durabead, plus important new advantages. Heavy Durabead can cut TCC unit construction costs as much as 20%. Used in present TCC units, it can increase reactor and regenerator capacities up to 50%, compared to chrome bead catalyst.

* * *

These are the results of Mobil Catalyst leadership—*greater yields of salable products from every crude oil barrel, increased profits for TCC licensees and operators of other moving bed units in the petroleum industry.*

Socony Mobil Oil Company

Leader in catalyst research

Mobil

DEPT/Service & Equipment Companies

JOHN W. BRAND has been named vice-president and general manager of M. J. Crose Mfg. Co., Tulsa, which will merge shortly with Perrault Equipment Co., Tulsa, and become Crose-Perrault Equipment Corp. Brand, who recently moved to Tulsa as vice-president of Crose, will also remain active in Crose's Canadian subsidiary, Crose-Curran, Ltd. **John Behrenfeld**, a vice-president, has been transferred to New York, where he will head Crose's export department. **W. H. (Buck) Royal** succeeds Behrenfeld as sales manager in Tulsa. Royal was formerly manager of Crose's western division in Denver. **Ben Montgomery**, newly elected vice-president, will continue in charge of the company's Houston division.

J. W. Brand

G. E. Conner

GEORGE E. CONNER moves up from executive vice-president to president of Milwhite Mud Sales Co., Houston. Conner joined the company in 1954 as a salesman. In 1955 he was promoted to sales manager, and in 1958 was elected executive vice-president.

J. S. (Sid) PINION is president of a new company called Apex Pipe & Supply Co., headquartered in Houston. Apex will distribute oil country tubular goods in the Gulf Coast and Mid-Continent area. Pinion has been associated with International Supply Co., Bethlehem Steel Co.'s Supply Division, and Atlas Pipe, Inc.

J. S. LOPEZ has joined Bennett & Patton, Foreign Freight Forwarders, Houston. For the past 3½ years, Lopez has been associated with Behring Shipping, specializing in overseas forwarding of oil field equipment and machinery. The name of the forwarding company was changed from Bennett Forwarding to Bennett & Patton on Nov. 1.

RUSSELL W. WETJEN has been named vice-president and general manager of Granberg Corp., Oakland, Calif., newly acquired subsidiary of American Meter Co. Granberg manufactures tank truck, bulk plant, and pipeline petroleum meters and pumps. Wetjen is also vice-president and general manager of Buffalo Meter Co., an American Meter affiliate in Buffalo, N. Y., where new testing and assembly facilities will be built to handle demand for Granberg products east of the Mississippi. Before Wetjen joined Buffalo Meter last year, he was sales manager of the petroleum and industrial division of Neptune Meter Co.

ROBERT A. BARR is the new vice-president in charge of the refractories division of Babcock & Wilcox Co., New York. He succeeds **James E. Brinckerhoff**, who is retiring after 40 years with the company. Barr was appointed general manager of the refractories division earlier this year.

R. A. Barr

J. M. Leitch

JAMES M. LEITCH becomes manager of European operations at the London office of Continental-Emsco Co. He has been with the C-E organization for the past 13 years. In his new position, Leitch will supervise distribution activities in Europe, North Africa, and the Middle East. He will also head manufacturing operations at the St. Albans plant (near London) of Continental-Emsco Co. (G.B.), Ltd., and direct business relations with C-E's manufacturing licensees in France and Italy. The British subsidiary was formerly called Emsco Engineering Co., Ltd.

MIDDLE EAST CONSULTANTS and **PIPE LINE TECHNOLOGISTS, INC.** are making a series of studies and an analysis of pipeline problems for the Iranian Consortium, in Teheran. **R. H. Latham**, chief project engineer, and **Leonard Jeffery**, senior engineer, both from Pipe Line Technologists, have been assigned to this survey, and are presently located in Middle East Consultant's office, in Teheran.

WILLIAM I. BALLENTINE, JR., has joined the Southern Pipe Division of U.S. Industries, Inc., Azusa, Calif., as chief engineer. He formerly served as manager of research and development, and general supervisor of research and development services, for U.S. Steel Co.'s Consolidated Western Steel division. In his new position, Ballentine will be responsible for research development, inspection, industrial engineering, and plant engineering functions.

W. I. Ballentine, Jr.

C. W. Floyd, Jr.

C. W. (Bill) FLOYD, JR., has been appointed division engineer in the petroleum production systems division of Sargent Engineering Corp., Huntington Park, Calif. He was associated with Induflux Testing Service as Mid-Continent manager until 1954, when he went with Duke Electric Co., in Odessa. After that, he served as section head of electronic research for Western Co., in Midland. In 1958 he became a consulting electrical engineer.

J. H. Grubb

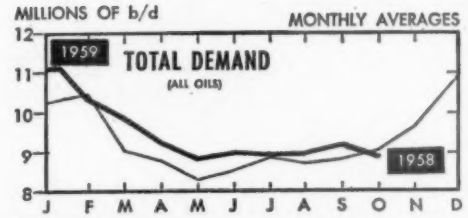
W. R. Davis

A. D. Blackledge

CAPT. A. D. BLACKLEDGE, USN (ret.), W. R. DAVIS, and **J. H. GRUBB** have been named to newly created vice-presidencies of Cameron Iron Works, Inc., Houston. Blackledge, with the company since 1949, is vice-president and assistant general manager; Davis, with the company since 1940, is vice-president and manager of the pressure control equipment division; and Grubb, with Cameron for the past four years, is vice-president and manager of the international division. The pressure control equipment division consolidates the manufacture, engineering, and sales of Cameron products for the domestic petroleum industry, and the international division handles the sales and manufacture of Cameron products outside the United States. Other new vice-presidents: **J. W. Brougher**, manager of the special products division; **C. G. Hayward**, controller; and **J. B. Ogden**, manager of industrial relations. **J. S. Abercrombie** has been reelected president and chairman, **Herbert Allen** vice-president and general manager, **R. H. McCullough**, secretary-treasurer.

PETROLEUM WEEK'S

Fingertip Figures



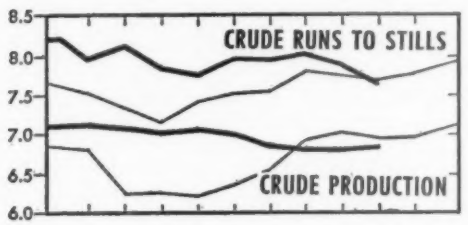
Figures for period ended November 27, except as noted

TOTAL DEMAND

Latest 4-week average	10.048
Year ago	9.302

DISTILLATE DEMAND

Latest 4-week average	2.586
Year ago	2.314

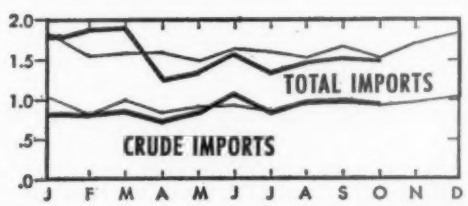


RUNS TO STILLS

Latest week	7.973
Previous week	8.017
Year ago	7.785

CRUDE PRODUCTION

Latest week	6.969
Previous week	6.935
Year ago	6.983

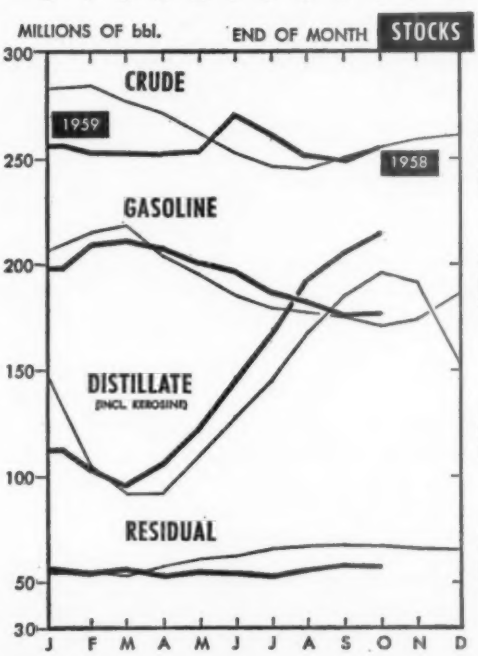


TOTAL IMPORTS

Latest week	1.794
Previous week	1.583
Year ago	1.711

CRUDE IMPORTS

Latest week	1.018
Previous week	.897
Year ago	.972



CRUDE STOCKS

Week-ended 11-21	252.5
Previous week	253.9
Year ago	256.6

GASOLINE

Latest week	179.2
Previous week	177.3
Year ago	173.6

DISTILLATES

Latest week	202.6
Previous week	206.6
Year ago	193.3

RESIDUAL

Latest week	56.2
Previous week	56.3
Year ago	66.2

Current demand reflects the upturn in the nation's economy that has been mounting with the resumption of production by steel and other industries that had been hurt by the steel strike.

Total demand for all oils last week averaged 10.3-million b/d, just 200,000 b/d under the previous week.

While the biggest gains in demand are in the burning oils for home and industry, demand for gasoline is running high for this so-called "off peak" season.

The heavy draft on distillates inventories in November is bringing stocks into balance with demand, though inventories still need further "correction."

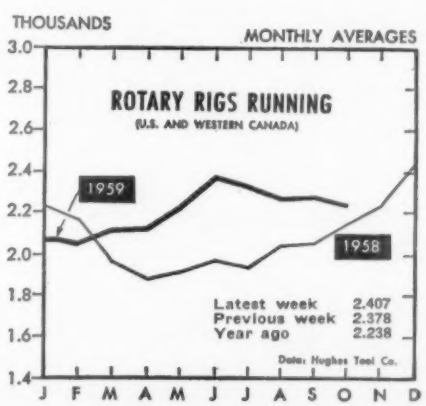
Since the end of October, distillates stocks (including kerosine) have declined by 12-million bbl. from their record high level of 214.6-million bbl. As a result, current stocks are only 9.3-million bbl. above a year ago, compared with a 20-million-bbl. "spread" last summer.

So far, refiners have held runs to what most economists say is a proper level of no more than 8-million b/d.

Should such restraint on runs be continued through mid-December, the anticipated strong demand during the month will probably reduce top-heavy product inventories.

There is a growing concern, however, over the relatively unbalanced yields of the nation's refineries.

The gasoline yield on crude and blended gas liquids is currently averaging 51.6% nationwide—the same as the average in the three summer months, when gasoline demand was nearly 500,000 b/d above the present level.



The Market Trend

Dealer Gasoline Prices Start to Weaken

It's the tank wagon level that's leading gasoline prices into lower ground this season. Interestingly enough, gasoline prices at the refinery gate have held firm.

The most widespread cut came when Indiana Standard dropped its dealer tank wagon prices 0.5¢ to 1.5¢ in six states in the Midwest. The reductions took place in portions of Wisconsin, Illinois, Missouri, Iowa, Nebraska, and Kansas.

The following day Standard reduced prices 1.3¢ to dealers in North and South Dakota and Minnesota. The company left its prices unchanged in six other states where it markets.

On the West Coast, rack prices for gasoline in Los Angeles fell by 0.65¢ a gal. Refiners in the area said they were selling to large private-brand retailers at the newly reduced prices of 11¢ for regular and 12.5¢ for premium.

Gasoline was shaky in the East, too. Prices at Portland and Bangor, Me., were cut 0.8¢ a gal. Upstate New York tank wagon prices were cut 0.7¢ to 1¢. Prices in Rhode Island slipped by 0.9¢, with the new dealer level down to 10.9¢ a gal.

The correlation between refinery and dealer prices for gasoline seems to get weaker every year. The declines in dealer prices in the Midwest took place while refinery and terminal prices in Oklahoma, Chicago, and the Twin Cities were unchanged. In fact, strength in gasoline quotations at West Memphis has led some traders to believe that Oklahoma (connected by pipeline) might even take an off-season increase.

The Gulf Coast market in no way has signaled the weakening in prices in upstate New York and New England. You can find some discounts at the Gulf in premium gasoline. Offerings of regular-grade, however, are not burdensome. In fact, one Los Angeles buyer said he had to quit the Gulf Coast because he couldn't find any bargains.

Advances in heating oil prices will take some of the pain out of the declines in gasoline. Last week, distillates were priced higher by 0.5¢ in northern Ohio, in parts of Indiana, and in Minneapolis. More such advances will be forthcoming.

A Trick Deal in Gasoline:

The tanker Soho Maru landed recently to discharge 75,000 bbl. of 88-octane Japanese-made gasoline in the Wilmington (Calif.) area, and the material was put into bond. Later, bonded trucks will pick up the product, and move it to Mexico.

A Puzzle For Navy Special:

Navy Special fuel oil prices—historically—have been made up from the prices of its components—70% bunker "C" fuel and 30% No. 2. So there was considerable head-scratching when a recent Caribbean bid on 5-million bbl. was made at $1.80 a bbl. Bunker "C" fuel in the Caribbean is $2.00 a bbl., and No. 2 fuel (8.125¢ a gal.) is $3.41.

If the seller used the full price for bunker "C" fuel, his ideas on No. 2 fuel must have been 3.17¢ a gal. If he used the full price on No. 2 fuel, his ideas for bunker "C" must have been around $1.11.

The Market Place AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All prices as of November 30

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U. S. Gulf Coast, cargoes
- Gasoline, 98 oct prem....12.25-13
- Gasoline, 92 oct reg....11-11.5
- Kerosine....8.625-10.375
- Heating oil, No. 2....8.125-9.875
- Gas oil, 48-52 d.i....8.375-10.125
- Fuel oil, bunker "C"....$2.00-2.10

Caribbean, cargoes
- Avgas, Grade 100/130....14.75
- Gasoline, 93 oct research prem....11.25
- Gasoline, 87 oct research reg....10.375
- Gasoline, 79 oct research....9.625
- Gasoline, 70-72 oct motor method....9.5
- Kerosine....8.625-8.875
- Heating oil, No. 2....8.125
- Gas oil, 48-52, d.i....8.375
- Fuel oil, bunker "C"....$2.00

New York Harbor, barges
- Kerosine....9.35-9.6
- Heating oil, No. 2....8.85-9.1
- Fuel oil, No. 6....$2.37-2.47

Okla-Group 3, northern shpt., bulk
- Gasoline, 91 oct reg....10.5-11.5
- Kerosine....10-10.125
- Heating oil, No. 2....9
- Fuel oil, No. 6....$1.60-1.80

Chicago, bulk
- Gasoline, 91 oct reg....11.5-11.75
- **Heating oil, No. 2....9.625†-10.85**
- Fuel oil, No. 6 high sulfur....7.4-7.5

Los Angeles, rack
- **Gasoline, 88 oct reg....11.5↓-12.65**
- Diesel fuel, PS 200....7.75-11.25
- Light fuel, PS 300....$2.80
- Heavy fuel, PS 400....$2.15-2.35

Natural Gasoline, Grade 26-70
- FOB Group 3....4.5
- FOB Breckenridge, Tex....4

LP-Gas
- Propane, Oklahoma (Group 3)....5
- Propane, Baton Rouge....5.625-5.875

Pennsylvania Lubes
- Bright stock, 25 p.t....23
- 200 vis. neutral, 25 p.t....25

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent, 95 v.i....25-26
- Neutral, solvent, 200-210 vis....21.5-22.5

Gulf Coast Lubes
- **Bright stock, solvent, 95 v.i....25†**
- **Neutral, solvent, 200 vis....21.5†**

Eastern Hemisphere

Singapore (Pulau Bukom), cargoes
- **Avgas, grade 100/130....15.875↓**
- Gasoline, 79 oct research....10
- Kerosine....10.125
- Gas oil. 48 d.i. minimum....9.625

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, (Okla.-Kan.), 36.0-36.9....$2.62-2.97
- North Dakota, 36.0-36.9....2.62-2.87
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9....3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9....2.92-3.22
  - West Texas, sweet, 36.0-36.9....3.00
  - West Texas, N. M., inter., 36.0-36.9....2.93
  - West Texas, N. M., sour, 32.0-32.9....2.71
  - East Texas, flat....3.05-3.25
  - Mirando, 28.0-28.9....3.31
- Illinois Basin, flat....3.00
- Pennsylvania Grade, Bradford dist., flat....4.40
- California, Signal Hill, 21.0-21.9....2.22-2.32†
- North Louisiana-Arkansas, 36.0-36.9....2.77-3.02
- Wyoming, sweet, 36.0-36.9....2.85-2.90
- Wyoming, sour, 32.0-32.9....2.63-2.71

Canada (flat prices, at the well)
- Pembina (Alta.)....$2.38
- Leduc-Woodbend (Alta.)....2.53
- Redwater (Alta.)....2.42
- Steelman A (Sask.)....2.435
- Virden (Man.)....2.31

Venezuela (Cargoes, FOB lifting port designated)
- Cumarebo, 47.0-47.9, Tucupido....$3.34
- San Joaquin, 41.0-41.9, Puerto la Cruz....3.10
- Oficina, 35.0-35.9, Puerto la Cruz....2.78-2.80
- Tia Juana, Medium, 26.0-26.9, Amuay....2.30
- Bachaquero, flat, Las Piedras....1.73-1.88
- Tarra, 38.0-38.9, San Lorenzo....2.83
- Lagunillas Heavy, flat, Cardon....2.10

†Differential per deg. of grav. varies.

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura....$1.90
- Safaniya, 27.0-27.9, Ras Tanura....1.50
- Iran, 34.0-34.9, Bandar Mashur....1.86
- Iran, 34.0-34.9, Abadan....1.81
- Iraq, 35.0-35.9, Fao....1.80
- Kuwait, 31.0-31.9, Mina-al-Ahmadi....1.67
- Qatar, 41.0-41.9, Umm Said....2.05
- Neutral Zone, Burgham, 23.5-24.4, Mina Saud....1.51
- N. Zone, Eocene-Ratawi, 20.5-21.4, Mina Saud....1.38

Middle East, Eastern Mediterranean
- Arabian, 34.0-34.9, Sidon....$2.27
- Iraqi, 36.0-36.9, Tripoli, Banias....2.31

Far East, Cargoes FOB Lutong, Sarawak
- Seria Light, flat....$2.57

KEY TANKER RATES

(Last paid, per long ton, single voyage)

- **U.S. Gulf-New York, clean....(USMC flat) $2.85†**
- **U.S. Gulf-New York, dirty (USMC—22½%) $2.21†**
- **NWI-USNH, dirty....(USMC—42½%) $1.58†**
- NWI-UK/Cont., dirty....(Scale—45%) 17/10*
- Persian Gulf-UK/Cont., dirty...(Scale—48¾%) 24/11*
- Persian Gulf-USNH, dirty....(USMC—67½%) $4.13

**Sterling.*

DEPT/Marketing

How Much Is Dealer Good Will Worth?

- **Dealers want some recognition of the good will suppliers tell them they generate over the years.**
- **But suppliers aren't sure the good will can be sold. When a dealer quits, does the good will remain?**

Service station dealers are becoming increasingly concerned over the subject of good will—the value they impart to their stations over and above tangible asset value.

The concern is demonstrated wherever dealers meet. In August, for example, the National Congress of Petroleum Retailers gave much consideration to "goodwill in the transfer of a service station."

In New York last month, the Inter City Service Stations Assn. held a panel discussion on the problem.

And one of the eight stated objectives of the American Gasoline Dealers Assn. is: "Recognition of the effort of the gasoline retailer by establishing a value to the business he develops and builds."

Dealers want general recognition of the possible existence of good will when station leases are transferred.

Without the suppliers' explicit acknowledgment of the possible existence of an intangible value that can be transferred from one dealer to another, lessee dealers feel that they are on the defensive when they ask to be rewarded for the good will they have built up.

Dealers who own their own stations or who lease from real estate concerns find the problem of obtaining good will recognition less difficult than do lessee dealers.

Lessees complain that some suppliers actually discourage future lessee dealers from paying anything for good will. "The old dealer didn't pay anything for it, why should you?" is what some suppliers tell their future dealers, according to Nat Azarow, executive secretary of the American Gasoline Dealers Assn.

The Goodwill Subcommittee of the Service Station Advisory Committee of API is making a study of the problem in six major marketing areas.

After a lengthy meeting last month in Chicago, the members of the subcommittee decided to investigate the subject of good will in their own market areas.

Robert M. Jenney, chairman of the subcommittee and president of Jenney Mfg. Co., told PETROLEUM WEEK that his group will "try to delineate the problem" by the time it meets again in May.

The members of the subcommittee will attempt to find answers to such questions as: How is the existence of good will determined? How much is being paid for good will? What position should the supplier take?

Any light the API subcommittee can throw on the problem, dealers feel, would make their position clearer when they discuss good will with company sales managers.

A spot check of the sales managers of major oil companies by Petroleum Week reveals a prevailing skepticism of the existence of good will. But generally, the managers say, they don't interfere in good will transactions when they occur.

"I doubt that good will exists in even 10% of the cases," says the retail and distributor sales manager of a major supplier.

Another manager guesses that no more than 1% or 2% of lease transactions in his company involve good will. "But if a dealer can get some one who is willing to pay for good will, we won't stop him," he says.

"We would never recommend it," says a retail manager for a national company. "While I appreciate that it may have value, so far we haven't felt that it is something we could consider."

None of the companies checked officially opposes the recognition of goodwill. But none of them has any policy or benchmark by which good will can be measured.

As dealers become interested in the problem of good will, however, supplying companies realize that they will have to take a definite position sooner or later.

"We've got to study the problem," says one marketing manager, "because it is going to be brought up at more and more dealer associations."

The key fact, dealers say, is that suppliers constantly emphasize the value of the dealer in building up volume at his station—and generally ignore this value when the lease is transferred.

Even though he may become intimately associated with his station, in the minds of his customers, the lessee dealer is still not the owner of his station, and has no control over his lease.

"The dealer is a shadow," says Alan B. Feinman, executive vice-president of the Inter City Service Station Assn. and a member of the API good will subcommittee.

"Is he a businessman or a glorified employee?" he asks.

In no other retailing enterprise, Feinman says, does this vagueness exist.

Dealers say they would have more incentive to build up good will among their customers if they knew that consideration would be given to the value of the good will in any transfer.

Now, dealer representatives say, dealers are only penalized for increased volume by having to pay higher rentals.

Furthermore, dealer spokesmen say, a dealer who pays for good will after having made a thorough evaluation of a station is a much better risk than a dealer who takes no consideration of the earning potential of the station.

Not only would the acknowledgment of good will tend to upgrade stations, they say, but retiring dealers would be more prone to seek out successors who are financially able to pay for volume that has been built up over the years.

Some suppliers admit that there is "some truth to all this," but they are not prepared to commit themselves on the subject of good will as yet.

Perhaps the most important question facing dealers and suppliers is whether or not good will generated by one dealer can be passed on to a future dealer.

"Goodwill . . . is nothing more than the probability that the old customers will return to the old place," is the way an English judge tersely pinpointed the problem 150 years ago. Most of the company executives interviewed by PETROLEUM WEEK adhere to a similar definition.

But, says one retail manager, "We have dozens of records that indicate that when a service station dealer leaves a station, the good will goes with him."

On the other hand, Nat Azarow

mentions a case in which a dealer was forced to take a lease on a station directly across from one he had been operating. So many of his customers followed him, says Azarow, that the other station was forced to close.

Taking another view of the question, one oil company executive notes that even if the volume of a station does not decline after a dealer leaves his station, such factors as population, traffic, and company promotion may be more responsible. Since these are factors that are inherent in the station—and out of the dealer's control—the dealer should not be rewarded for them, he feels.

Dealers disagree. It is the dealer, they say, who has taken the major risk in investing his time and effort in a station that is only potentially valuable.

When the population does increase, the dealer, they insist, should get part of the reward—along with the supplier and the future dealer.

One supplier insists that when good will is built up by a dealer it is almost all attached to him personally, and not to his station, and therefore cannot be passed on.

Dealer representatives, on the other hand, insist that good will can be passed on. But when a good dealer is replaced by a poor dealer, they say, the good will is dissipated.

If future dealers must pay for good will, dealers insist, they will of necessity be more financially sound and be more prone to maintain the quality of the station operation.

It remains for API, or some other agency, to determine whether or not good will recognition will improve dealer quality, one oil executive concludes.

Even if the existence of good will is agreed to, there remains the problem of how to pay for it.

Some dealers and suppliers who have discussed this problem say that installment payments could be arranged. Thus, the retiring dealer would receive income from his good will after he leaves the station.

Most dealers and suppliers agree that the old dealer should remain at the station after he retires, in order to introduce the new dealer to the customers and acquaint him with his management techniques.

Furthermore, the old dealer should be restricted from entering a competing station within a certain period.

But all these modifications should be agreed to by the dealers, free of supplier intervention, dealers feel. Only if the new dealer requests it, should suppliers advise on good will transactions, they say.

Oil Stalks Gas on Long Island

On Long Island this month, a nip-and-tuck campaign between oil marketers and the local public utility is just warming up as the heating season gets under way.

The Oil Heat Institute of Long Island, one of the nation's largest local oil heat promotion groups, is just counting up the results of the membership rally that it held this fall.

Ray Nathan, president of the Long Island OHI, told PETROLEUM WEEK that membership jumped 50%, to a total of 180 distributor-members, and that a proposed promotional budget of $300,000 seems safely in the till.

Armed with these funds, which are almost double the present budget, OHILI will expand its advertising by radio, newspapers, and commuter railroad car-cards, and will start posting its oil heat messages on highway billboards.

"Everywhere on Long Island—at all times—we're going to be giving Long Islanders the facts on oil heat," said Len Braun, OHILI's promotional chairman. "We're pulling out all the stops beginning right now."

Meanwhile, Long Island Lighting Co., which distributes gas in the area, is planning a promotion budget of $1.6-million. Only 70% of this will go for gas heat advertising, and some of these funds represent such non-promotional categories as the salaries and transportation expenses of clerical workers and salesmen. Nevertheless, next year's gas heat promotional campaign will still out-spend oil marketers by about three to one. Five years ago, when OHILI was in its infancy, Long Island Lighting was spending only $739,000 for promotion, less than half the amount allocated for the present campaign.

Both sides claim impressive gains in the booming Long Island home-heating market.

In just five years, says Pat Caputo, director of OHILI, oil marketers have added 82,000 new oil heating accounts. This compares with the 36,600 new space and water heating accounts listed by Long Island Lighting.

But gas utility executives can point to substantial gains in the new home market. Almost eight out of ten of the new homes built where gas is available have gas instalaltions. Five years ago, the proportion of gas homes was less than one in every four available homes.

"Gas must be doing a good job," says Wilmot O. Smith, vice-president of sales and new business for LILCO,

HARD-HITTING advertisements have been characteristic of the promotional campaign of Long Island oil heat jobbers.

"if it has been able to win that large a share of the market."

Despite the impressive promotional attack that oil marketers have been staging on Long Island, utility executives show no indication of alarm.

"Oh, they've given us competition," Smith admits. "But we don't mind that, we think that the competition is healthy.

"We may be increasing our gas promotion expenditures a little because of them. But this year, I believe, we will be spending no more than we spent last year—about $1.6-million."

Smith also says that LILCO's subsidy to new home builders, its cash "promotional allowance" for each new home installing gas equipment, has been reduced from $100 to $50. Industry sources expect a further reduction to $25 next year.

"Any campaign needs a little boost to get it off the ground," Smith explains. "Now that we've got our campaign under way, we feel that we can lower our allowances to builders."

Even the advent of less-expensive oil heating equipment is not viewed by the utility as a threat to the entrenched gas heat position.

Oil marketers "would have to produce equipment that can be priced lower than gas equipment," says Smith. He believes that if the equipment were priced about the same, gas would still have the edge.

"Builders who have had successful experience with gas in their new homes are not going to switch over to oil," Smith explains. "Gas heating does away with storage tanks, oil pumps, and expensive motors."

There is, however, one problem

that concerns utility executives—and that is the future price of natural gas.

Smith says comparisons between gas and oil prices prompt most of the inquiries his company gets from heating customers. At present, these inquiries can be satisfied with the dispatch of a "heating specialist" to the home to perform an inspection of equipment and give an estimate on potential heating bills.

But, says Smith, "the industry is concerned about possible price increases of gas in the future. No one knows how the Federal Power Commission will handle the price increases they are now studying."

What's New / IN MARKETING

All major oil companies last week followed Esso Standard Oil Co.'s lead and discontinued fair trade in North Carolina (PW—Nov.27'59, p43).

First were Gulf Oil Corp., Phillips Petroleum Co., and Pure Oil Co.

"The up and down price wars," explains M. W. O'Haver, Phillips division manager at Raleigh, "have been expensive. We figured fair trade would not work in North Carolina because of the opposition of the attorney general and the fact that other companies not fair trading will move into local areas."

Atty. Gen. Malcolm B. Seawell last week threatened to take court action "within a week or ten days against any company that does not halt fair trade activities."

At the time of his remarks, American Oil Co., Atlantic Refining Co., and Sinclair Refining Co. were still fair trading in the state. But they, too, have now dropped fair trade.

•

The oil industry needs a new classification of heating oils, according to J. V. Resek, president of Industrial Combustion, Inc., of Wisconsin, and immediate past president of the Oil Heat Institute of America.

The former OHI executive says major producers and marketers of heating oils should support new classifications of heating oils so that purchases may be made by referring only to name and number without further technical description.

No. 5 oil now is so varied, Resek says, that some of it "will flow like water" while "you can stand on" other varieties.

•

Shell Oil Co. is promoting safety with advertisements that quiz the motorist's sense of danger.

The ads, now undergoing readership tests in California, ask motorists to spot ten hazards depicted in illustrated traffic situations.

The ads are similar in approach to Shell's 1956 safety series (PW—Jan. 27'56,p36). They were prepared in cooperation with Dr. Leon Brody, research director of New York University's Center for Safety Education.

If tests in California, and Maine, and Michigan are successful, the campaign will be extended nationally.

•

Premium gasoline last month averaged 0.1 octane number higher than in October, at 99.3-octane, while regular gasoline remained unchanged at 92.2-octane, according to Ethyl Corp. Superpremium showed a range of 100.3- to 102.4-octane.

This announcement is neither an offer to sell nor a solicitation of an offer to buy these securities. The offer is made only by the Prospectus.

$61,500,000

Transwestern Pipeline Company

$40,000,000

5% Subordinated Debentures, due November 1, 1969

After October 1, 1961 payable at option of Company in 5½% Cumulative Preferred Stock ($100 par value)

2,000,000 Shares

Common Stock ($1 par value)

The Debentures and the Common Stock are being offered only in Units, each consisting of $100 principal amount of Debentures and 5 shares of Common Stock—a total of 400,000 Units. The Debentures and the Common Stock will not be separately transferable prior to November 1, 1960 or such earlier date as the Company may elect.

Price $153.75 per Unit

Copies of the Prospectus may be obtained in any State only from such of the several Underwriters, including the undersigned, as may lawfully offer the securities in such State.

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November 18, 1959.

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How to get a bigger share of the diesel market

Formulate superior diesel fuels using DuPont FOA-2 to reduce filter plugging

When you add Du Pont Fuel Oil Additive No. 2 to your lower grade stocks, you cut down the rate of sludge formation and greatly improve the fuel.

This is because FOA-2 is an excellent dispersant and solubilizer. It reduces the size of insoluble residue particles. The tiny particles can then flow through the system and burn with the oil. Consequently, filter-clogging and injector-sticking are greatly reduced.

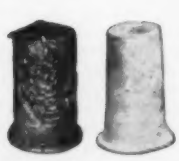
Performance tests have demonstrated the effectiveness of FOA-2. For example, in one test with a heavy cycle stock treated with FOA-2, the engines ran for 35 days without changing filters and without appreciable pressure drop. Without FOA-2, the filters became blocked in one week.

FOA-2 not only cuts sludge formation, it often cleans parts where sludge has begun to build up.

Being ashless, FOA-2 does not contribute to exhaust stack sparking.

Because of its many outstanding advantages, Du Pont FOA-2 is now being widely and successfully used by many oil companies in the diesel fuels supplied to the nation's leading railroads.

Your Du Pont representative can fill you in with further details. Or you can write for more information to E. I. du Pont de Nemours & Co. (Inc.), Petroleum Chemicals Division, Wilmington 98, Delaware.



Better filterability of FOA-2 treated fuel is shown here. The filter at the left was clogged in a week's use of untreated economy fuel. The clean filter at the right was used several weeks in an economy fuel with FOA-2 added.

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909 Enterprise Bldg.
522 South Boston
Gibson 7-5594

England, London E. C. 4 — E. E. Schirmer
McGraw-Hill Co., Ltd.
95 Farrington St.

DEPT/Personals

PAUL J. PARKER has been elected vice-president of Phillips Petroleum Co.'s new international department. Parker, who was elected a director in 1954, has been secretary and assistant treasurer of the company since 1950. **W. F. Martin,** formerly assistant secretary, succeeds Parker as secretary and continues as an assistant treasurer. The new international department will oversee three divisions that will conduct Phillips activities outside the United States. The divisions and their managers are: **Harry D. Brookby,** exploration and production; **John Getgood,** sales and development; and **W. L. Phillips,** operations. Brookby was manager of the former international department, and Getgood was manager of the foreign sales and development department. Phillips has been vice-chairman of the company's operating committee. All key personnel of the new department are located in Bartlesville, Okla., except Getgood, who will remain in the New York office.

P. J. Parker

F. R. Hall

FRANKLIN R. HALL is the new president and director of Esso Standard Oil Co. (Uruguay) S.A., in Montevideo. He succeeds the late **William B. Brown.** Hall has been manager of the Southern division of Esso Standard do Brasil, Inc., in Sao Paulo, for the past 3½ years.

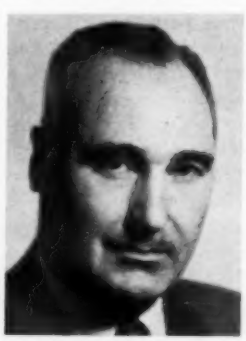
DONALD B. LAMONT has been elected vice-president and a director of San Jose Petroleum, Inc., New York. Lamont was formerly an independent oil operator in Los Angeles. San Jose Petroleum's subsidiary, San Jose Oil Co., owns oil concessions in the Philippines.

A. C. (Bill) ROSE, JR., has resigned from the Louisiana Petroleum Council, in Baton Rouge, to accept the position of executive vice-president with the Colorado Petroleum Committee, in Denver. He has been associate director of the Louisiana association for the past year.

THOMAS CLARKE DEANE has been elected a director of Macmillan Petroleum Corp., Los Angeles. Deane was vice-president and manager of the Los Angeles main office of The Bank of America until his retirement earlier this year.

FRED H. MOULTON has been appointed district sales manager in Chicago for Amoco Chemicals Corp. He succeeds **R. E. Elliott,** who was recently appointed manager of industrial chemicals services. Moulton has been St. Louis sales representative since he joined the company two years ago. Before that, he was industrial products salesman for Standard Oil Co. (Ind.).

T. O. (Tom) HALL, General Geophysical Co., Houston, is the new president of the Society of Exploration Geophysicists, succeeding **E. V. McCollum,** E. V. McCollum & Co., Tulsa. Other new SEG officers are: **Frank Searcy,** Continental Oil Co., Ponca City, first vice-president; **Dean Walling,** Western Geophysical Co., Los Angeles, second vice-president; **Phil P. Gaby,** consultant, Jackson, Miss., secretary-treasurer; **Nelson C. Steenland,** Geophysical Associates International, Houston, editor.



M. W. Johnson

D. W. Ramsey

G. W. Butler

D. W. RAMSEY becomes vice-president and a director of the new Humble Oil & Refining Co. (Del.), in Houston. **M. W. JOHNSON** succeeds him as coordinator of worldwide marketing for Standard Oil Co. (N.J.), and **G. W. BUTLER** succeeds Johnson as deputy coordinator of marketing of the parent company. Butler has been assistant general manager of marketing for Esso Standard Oil Co., domestic marketing and refining affiliate of Jersey. Ramsey has been connected with Jersey's marketing operations since 1928, and Johnson began his career with the Jersey organization in that year. Butler joined Esso in 1929. **Forrest M. Darrough** has also joined Humble of Delaware. He has resigned as vice-president and general counsel of Carter Oil Co., Tulsa, to become associate general counsel for the new company, at Houston.

P. D. COLLINS and **C. J. ANGULO** have been elected directors of Esso Standard (Libya) Inc., exploration and producing affiliate of Standard Oil Co. (N.J.). Collins moved to Libya in 1957 as deputy general manager of Esso Libya. Angulo, who will transfer from New York to Libya, has been assistant manager of the negotiations division of Jersey Standard's producing coordination department.

SIDNEY S. GALPIN is the new division superintendent of New York State Natural Gas Corp.'s southern division, with offices in Jeanette, Pa. He has been production engineer in the company's central division since 1957. Galpin joined Peoples Natural Gas Co., an affiliate, in 1937. He transferred to New York Natural in 1952 as assistant superintendent and production engineer of the Oakford (Pa.) district.

S. S. Galpin

J. W. Carneal

J. W. CARNEAL has been appointed executive assistant to the vice-president in charge of employee relations and land and lease for Texas Gas Transmission Corp., Owensboro, Ky. Carneal, who was appointed director of sales and industrial development earlier this year, will continue to be responsible for industrial development activities. He has been with Texas Gas since 1949.

W. H. HAMMOND becomes petroleum geologist and manager of exploration activities for Texstar Petroleum Co., San Antonio, a division of Texstar Corp. He was formerly vice-president of Ralph E. Fair, Inc., San Antonio. He has also been associated with Magnolia Petroleum Co.

J. W. GALLAGHER has joined Liquid Transporters, Philadelphia, as assistant manager of operations, and **T. A. Knorr** is the company's cement operations manager. Gallagher has been in the engineering and sales departments of Butler Mfg. Co. Knorr has been general manager for Harold G. Cline, Inc., a carrier in the eastern part of the country, for the past six years.

JAMES B. CORBET, solicitor in the Alberta government's mines and minerals department, in Calgary, for the past five years, has been named manager of the Canadian Petroleum Assn.'s Alberta division, also in Calgary. He succeeds **S. Douglas Turner**, who has been named general manager of Big Inch Pipe Corp., Ltd.

JAMES C. DOTSON, formerly district superintendent at Lovington, N.M., for Service Pipe Line Co., transfers to Casper, Wyo., in the same position. He replaces **John H. Keyes, Jr.**, who has been assigned to Baytown, Tex., as manager of the Bayou Pipe Line. Service purchased American Oil Pipe Line Co.'s interest in Bayou on July 1, and has been designated by the other owners to become the operator on Jan. 1.

J. FRED CREEL becomes manager of the Houston district sales office of Warren Petroleum Corp.'s natural gasoline division. He succeeds **H. J. Stigletts**, who has resigned. Creel was most recently in the sales department at the company's headquarters in Tulsa.

T. M. WELTON has been elected marketing vice-president and a director of Oronite Chemical Co., subsidiary of Standard Oil Co. of California, with offices in San Francisco. He was formerly a regional sales manager for the chemical company.

GEORGE G. THOMSON, JR., has been elected vice-president of Asiatic Petroleum Corp., New York, a member of the Royal Dutch Shell Group. Thomson, who will be responsible for public and government relations, began his Shell career with Caribbean Petroleum Co., in Maracaibo, Venezuela, in 1947. His last assignment before joining Asiatic earlier this month was with Shell International Petroleum Co., Ltd.

MERWIN BRISTOL has been elected general counsel and a director of Standard Oil Co. (Ind.), Chicago. He succeeds **Thomas E. Sunderland**, who became president and chief executive officer of United Fruit Co. on Nov. 1. **Richard J. Farrell**, formerly assistant general counsel, succeeds Bristol as associate general counsel.

HAROLD D. HOOPMAN, operations manager of Ohio Oil Co. of Guatemala, succeeds the late **J. Patrick D' Artois** as resident manager. **Clark M. Shimeall**, formerly chief geologist for the company, becomes exploration manager. He succeeds **Arthur H. Petsch**, who is retiring.

G. H. Young

H. D. Hoopman

GRANT H. YOUNG has been elected vice-president of marketing for Ohio Oil Co., Findlay, Ohio. He succeeds **Nelson T. Stover**, who retired on Dec. 1. Young, with the company since 1930, was named assistant retail sales manager at Findlay in 1949. In 1954 he became assistant to the president, and two years later was named manager of the marketing development division. Earlier this year he was promoted to assistant manager of marketing.

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How Can So Few Have So Much?

IT IS DIFFICULT TO BELIEVE that a minority is to blame for all of the surplus inventories that have affected the industry's economic position for some time.

That is the assumption based on the data supplied to the Texas Railroad Commission in late November by 14 companies—nearly all of them large firms. The totals of the individual inventory positions reported by those companies were equal to 62.1% of the stocks of crude and major products held by the U.S. oil industry on Nov. 1.

According to the reports of the reporting companies, the total of their stocks was 4-million bbl. below the "desired" level for the start of November. And based on reports to the Railroad Commission of 23 companies last spring, the actual U.S. stocks of crude and major products of 704.9-million bbl. on Nov. 1 were 53.6-million bbl. above desired levels.

THE LATEST REPORT of individual stock positions of the 14 companies would imply, therefore, that the remaining companies, which hold only 37.9% of the U.S. stocks, are to blame for an over-all inventory surplus of 57.6-million bbl.

As we said in the beginning, it is difficult to believe.

Meanwhile, on the Refining Front...

THE SHARP CURTAILMENT in refinery expansion plans for 1960, and the equally drastic slowdown in the current year, as reported by the American Petroleum Institute, are long steps in the right direction.

Concededly, they do not make for a happy outlook for the equipment and construction people. But the end results will be beneficial all the way 'round, in the long run. It's good to see this kind of thinking on the part of management, for it will help tremendously in alleviating the worst problem that the industry has had to grapple with in years—excess refining capacity, plus the eagerness to use it without apparent regard for the consequences.

Individual managements made their curtailment decisions independently. Wouldn't it be nice now if they applied the same managerial wisdom and independence to crude runs, to help restore a balance between product inventories and demand? There'd be a lot fewer product headaches next year if they would.

Seasons Greetings!

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Why "Seal·Grip" is your most dependable replaceable tool joint

DESIGN. All mating surfaces — outer seal, pipe threads and inner seal — are on the same taper, assuring uniformity of fit on initial and replacement installations. This feature permits make up to compensate for possible deformation when applying new joints on used pipe, or old joints on new pipe.

COLD-ROLLING. The large land of all "Seal-Grip" pipe is cold-rolled at the mills. This process so increases the fatigue resistance of the pipe that failures have been eliminated in this zone.

COPPER PLATING. To protect the threads and shoulders against galling during the critical break in period, all Hughes tool joints are copper plated. Years of service have proved copper plating to be the most effective anti-galling agent yet developed for tool joints.

HARDFACING. "Hughesite"—developed and manufactured by Hughes — assures long-lasting protection against tool joint wear. Interruption of the guide ribs with hardfacing provides a continuous wear-resistant surface that protects the guide ribs and adjoining tool joint metal against undercutting.

SNOW TESTING. In addition to processing controls to safeguard the quality of Hughes hardfacing, all Hughes hardfaced tool joints are "snow" tested — a new inspection method that is a positive check of the bonding of hardfacing to the parent metal of the tool joint.

40 YEARS EXPERIENCE. Starting with the first alloy heat treated tool joint, Hughes has put more joints on pipe than all other manufacturers combined.

"Seal-Grip" tool joints are also available for attachment on new API LIGHTWEIGHT drill pipe.

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